THE

ECLECTIC REPERTORY

AND

ANALYTICAL REVIEW.

VOL. XI. APRIL, 1821. No II.

SELECTED PAPERS.

Some Observations relating to the secreting Power of Animals, in a Letter addressed to the Editor of the Journal of the Royal Institution. By A. P. W. Philip, M D. F. R. S. E., &c.

[From the Journal of Science and the Arts, Vol. IX.]

Worcester, May 1, 1820.

SIR—As you did me the honor to publish in the fifteenth Number of the *Quarterly Journal*, a paper relating to the agency of galvanism in the animal economy, in which I stated the reasons which seem to prove the identity of this power and the nervous influence, I trouble you with the following observations, connected with the same subject, to which I shall be much obliged to you, if they appear to deserve it, to give a place in the next number of that Journal.

Of the circumstances which tend to establish the identity of the nervous influence and galvanism, the strongest appears to be, the due performance of secretion by means of the latter, after the nervous influence is to such a degree withdrawn from secreting surfaces, by dividing their nerves, that without this aid, they are no longer capable of their function. This argument, of course, wholly rests on the supposition, that when we divide the nerves, we destroy the power of a secreting surface; not by any injury done to it through the medium of its wounded nerves, but by preventing the supply of something on which its secreting power depends. The consideration of this question is the object of the following paper.

It is not my intention to trouble you with any speculative opinions on this subject, but simply to inquire what inference the

facts we possess relating to it warrant. Having long been engaged in the practice of medicine, and considered it as the only object of my serious studies, I have been accustomed to measure the importance of all physiological questions by the degree in which they bear on the practical part of this profession, and consequently to attach but little value to any thing, which could not be brought to the test of experiment, and admit of useful application. During some investigations which have occupied the time I could spare, from the more active duties of my profession, and writings relating to its more immediate objects, I was struck with the wonderful power of galvanism, in repairing derangement of function in the animal body; and conceived, that if we could ascertain the principle on which it acts, it might be rendered an important agent in the cure of diseases. Its effects in restoring vigour to the lungs and digestive organs, under certain circumstances in the human body, of which an account is given in the *Philosophical Transactions* of 1817, and more fully in my *Inquiry into the Laws of the Vital Functions*, prove that this expectation has already been realized to such an extent, as to hold out a rational hope of further advantages, and consequently to make it worth while carefully to examine the grounds on which it is founded.

It will be necessary to premise a few observations on the relation which subsists between the nervous and muscular systems. Haller inferred from the fact, that after we have, as far as possible, deprived a muscle of nervous influence by dividing its nerves, it is still found capable of its function; that the muscular is independent of the nervous power. His opponents, however, have objected to this inference, because although in his experiment, the muscle is prevented from receiving more nervous influence, it is not deprived of that already bestowed on it, either forming a necessary part of the fibre itself, or dispersed throughout its substance in nerves too small to be removed by the knife; and this objection appears to be greatly strengthened by the circumstances, that after a muscle is separated from the body, its excitability is soon exhausted; and that those muscles, over which the will has no power, are notwithstanding supplied with nerves. It occurred to me, that this question could only be determined by some experiment, which should ascertain whether the permanence of the excitability of muscles is proportioned to the nervous influence they receive, or whether this influence tends, like other stimuli to exhaust it; for if it be proved that the permanency of the excitability is unimpaired by cutting off all fresh supply of nervous influence, and that the nervous influence ex-

hausts this quality precisely as other stimuli do, a doubt, I conceive, cannot remain, respecting its dependance on the mechanism of the muscular fibre itself. The 32d experiment related in the above Inquiry, appears to answer these questions in the affirmative, and therefore to prove the independent power of that fibre.

I am here called upon to notice an opinion on this subject, which, I believe to be altogether new, advanced by Dr. Alison in an able and ingenious paper in the last number of the *Quarterly Journal*, entitled *Observations on the Theory which ascribes Secretion to the Agency of Nerves*. While he admits the foregoing conclusion respecting the muscles of voluntary motion, he conceives, that in the muscles of involuntary motion, the nervous influence produces an "alteration in the vital power or tendency to contraction." A few observations on this, and another opinion of Dr. Alison relating to the same part of the subject, namely, that the arguments I have used against the opinion of M. le Gallois, that the power of the heart depends on the spinal marrow, are equally strong against the dependance of the secreting power on the nervous influence, will prepare us for considering the question which forms the principal subject of this paper.

Dr. Alison, I have just had occasion to observe, admits it to be proved, with respect to the muscles of voluntary motion, that stimuli applied to the brain and spinal marrow excite them merely by calling into action a power which exists in the muscle itself; but as it is found also, that stimuli applied to the same organs produce the same effects in the muscles of involuntary motion, there is surely the strongest proof that analogy, a principle founded on the simplicity usually apparent in the works of nature, can afford, for believing the operation of the stimuli to be similar in both cases. If, however, Dr. Alison has direct evidence of his opinion, this analogy, however strong, must be disregarded. Let us inquire into the evidence he adduces.

The following paragraphs are the only passages in his paper in which he attempts to support his opinion. After some observations on the opinion of Haller, he observes, (page 108)—"The experiments of Dr. Philip have illustrated more fully than those of any other physiologist, these two different modes in which changes in the nervous system affect muscular action. The general result of his observations, and of those of Haller, Bichat, and others on this subject, may be stated to be, that the first mode of action, that is, the direct excitation of muscular fibres to contraction by impressions made on the nervous system, is confined to the voluntary muscles; and that the second mode of action, that is the alteration of the vital power or tendency to contraction of

muscular fibres by impressions made on the nervous system, is chiefly exerted on the involuntary muscles."

In the foregoing observations, Dr. Alison refers to certain experiments of mine as the chief proof of his opinion. These experiments prove, that when any considerable part of the brain or spinal marrow is exposed to the action of a stimulus or sedative, the heart and blood-vessels are affected by it, in a way similar to that in which the muscles of voluntary motion are affected by the same substances applied to certain parts of the same organs. Now what relation these results have to the above opinion, I am unable to perceive. In the following paragraph indeed, Dr. Alison says, "although the term stimulus was very naturally applied by him to the substances, which quickened the action of the heart when applied to the brain or spinal marrow; yet various considerations might be stated to show, that the effect of these substances is more correctly expressed by saying, not that they excited contractions of the muscular fibres of the heart, but that they increased the tendency of the muscular fibres of the heart to contract from the stimulus of the blood." Dr. Alison, however, does not specify, nor can I at all conjecture what these considerations are; but he will admit that it is a consideration of weight respecting the statement he here makes, that the effect of the stimulus applied to the brain and spinal marrow on the heart, was precisely the same, whether the blood had been wholly evacuated or not. He is not himself an experimenter; and here, as in some other instances, experiences the disadvantage which often attends reasoning from the experiments of others. All the circumstances of an experiment are seldom related, the experimenter chiefly noting those which affect his own views on the subject, and thus others, who reason from them with other views, are often misled. To say that the nervous influence in one set of muscles, can increase and impair the excitability of the muscular fibre; and yet, that in another set this excitability depends wholly on the irritable nature of that fibre itself, either supposes that there are two kinds of muscular excitability, wholly differing in their nature, or implies a contradiction. The nervous influence, however independent the power of the muscular fibre, may call it into action, or it may so affect its organization as to impair its power; but how it can bestow a greater or less degree of what is derived from a different source, it would be difficult to understand, and Haller, in the passages quoted from his works by Dr. Alison, in the 108th page, has been justly regarded as forced into contradictions by the strength of his opponent's arguments, who called upon him to say, why the heart is supplied with nerves, if its excitability be wholly independent

of the nervous system. Thus it appears, that Dr. Alison has not only adduced no proof of the opinion above stated, but that unless we admit of two kinds of muscular excitability, for which I believe nobody will contend, it is incompatible with opinions, the truth of which he admits.

With regard to the other opinion of Dr. Alison, relating to this part of the subject,—he observes in the 112th page, "We are not more entitled to conclude that the secretions of the stomach depend on its nerves, from finding them stopped by the division of these nerves, than Le Gallois was to conclude that the action of the heart depends on the spinal marrow, from finding it stopped in his experiments by crushing that organ." Let us consider how far the cases are parallel. I say, that when M. Le Gallois destroyed the power of the heart, by crushing the spinal marrow, he was not at liberty to ascribe this effect to that power depending on the nervous system, because although it were independent of this system it might still be influenced through it. It was therefore necessary to observe the effects of other modes of withdrawing the nervous influence from the heart. My argument turns on the circumstance, that although the power of the heart may be destroyed by crushing the spinal marrow, it is not at all impaired by dividing the nerves which convey its influence. If it were equally destroyed by both, M. Le Gallois' inference I conceive, would be unavoidable. Now this is the case with the secreting power: it is equally destroyed by both; and unless Dr. Alison can point out some way of withdrawing the nervous influence from secreting surfaces without destroying their power, as has been done with respect to the heart, he cannot surely regard the two cases as at all parallel.

To the question whether the power of secretion depends on the nervous influence, we are now prepared to give, what appears to me a ready answer. The fact just stated, I conceive, affords this answer. We have no means of withdrawing the nervous influence from secreting surfaces without destroying their power. All will admit, that the only idea we attach to cause and effect is, that of two events, one of which constantly follows the other. It is therefore incumbent on those who deny that the nervous influence is essential to secretion, to show why the usual mode of reasoning is not to be considered conclusive in this as in other cases.

But conclusive as this mode of reasoning is, it is not the only way of answering the question before us. When the nerves of a secreting surface are divided, it loses its power, either in consequence of its nervous influence being impaired, or from the im-

mediate effects of the injury occasioned by their division. We have direct evidence against the latter opinion. If the injury, done to the nerves, were the cause of the derangement, the more the nerves are injured in the act of dividing them, the more as happens with respect to the power of the heart, when it suffers from injury of the brain and spinal marrow, the secreting power would be deranged; but we find its derangement bearing no proportion to the injury done to the nerves, but always proportioned to the degree in which the supply of nervous influence is impaired.

Besides if the division of the nerves produces its effect by injuring the secreting organs, although the nervous influence were again restored to them, they should still be found incapable of their function. But it has been ascertained by the experiments of Dr. Haighton, related in the *Philosophical Transactions* of 1795, that, if the secreting surface is not so far deranged by the division of the nerves as to prove fatal, as soon as the parts of the nerves are sufficiently reunited, again to convey the nervous influence, the secreting power again becomes perfect. Will it be alleged, that as the division of the nerves injures the secreting organ, their re-union repairs the injury? or that by some strange coincidence the injury done to the secreting surface in such cases requires exactly the same time for its repair, which is required for the re-union of the nerve, although the two events are no ways connected?

The question before us is, when the function of a secreting surface is deranged by dividing its nerves, is this to be ascribed to its being deprived of its nervous influence, or to its being injured by the act of dividing its nerves? We know that it arises from the former, because when it is deprived of its nervous influence by any other means the effect is the same; because the effect is not at all proportioned to the degree of injury done to the nerves, but to the degree in which the nervous influence is withdrawn; and because as soon as the nervous influence is restored, it is again capable of its function.

I may here observe that in one essential respect Dr. Alison in a paper above referred to, misconceives the result of my experiments. I never found the secretions suppressed, as Dr. Alison supposes, by dividing the nerves; so far from it that it is observed in the 124th page of the second edition of the "*Inquiry*," &c.; "It deserves notice that although the eighth pair of nerves have been divided, the food is found covered with apparently the same semifluid which we find covering the food in a healthy stomach," and it is constantly stated, that the lungs after the division of the

nerves were clogged with frothy mucus. It is true that after the division of the nerves, Mr. Brodie* did not find that arsenic produced the copious secretion observed from it in the entire animal. But it is to be recollected, that he speaks of a morbid secretion produced by the irritation of the poison, and which of course would have no existence if the irritation which occasioned it were prevented, a probable means of doing which was dividing the nerves of the affected organs. It is also true that Mr. Brodie found in the newly dead animal, that, although the circulation was supported by artificial respiration, there was no secretion of urine. But this result, I believe, was by no means the consequence of the loss of nervous power, but of the diminished *vis a tergo*. From every thing I have observed of the newly dead animal, it would appear that we cannot, by artificial respiration, which cannot be made to resemble the natural function, give such vigour to the circulation, as at all approaches to that in the living animal; and the secretion of urine which takes place after death, must be inconsiderable under any circumstances. Besides the division of the spinal marrow in the upper part of the neck, in Mr. Brodie's experiment, as it did not tend to lessen the supply of nervous influence to the ganglian system, could have no effect in diminishing the little nervous influence which still continues, (as appears from the experiments in which I divided the eighth pair of nerves immediately after death,) to be sent to secreting surfaces in the newly dead animal. I can truly say, that in the living animal I never found the secreted fluids suppressed by dividing the nerves. The remaining nervous influence seemed always sufficient to occasion a separation of fluids from the blood as long as it was supplied. It is to be recollected, that neither the stomach nor lungs are wholly deprived of nervous influence by dividing the eighth pair of nerves. Such is the connexion of the ganglian nerves, that it is impossible during life wholly to deprive any secreting organ of nervous influence. The object of my experiments was not to show, that when a secreting surface is deprived of the whole of its nervous influence, secretion is prevented; but, that when any considerable part of it is withdrawn, the properties of the secreting fluid are so altered, that it is no longer fitted for its purposes in the animal economy.

Although I consider what is said above as decisive of the question before us, were it not for too much extending the limits of this paper, I should be happy to make a few observations on several interesting questions relating to it, on which Dr. Alison touches.

* Philosophical Transactions for 1814.

On one of these as being extremely curious, I shall beg leave to detain you a few moments. In the 122d page, Dr. Alison observes, "In the child of whom we have an account by Mr. Lawrence, in his paper in the *Medico-Chirurgical Transactions*, Vol. V. page 165, there was neither brain nor cerebellum. This child lived four days, and the secretions from its stomach, bowels, and kidneys, seem to have been quite natural. Surely this is sufficient to show that the division of the eighth pair of nerves and of the spinal marrow in the neck, which stopped the secretions of gastric juice and of urine in those experiments, could not have acted by cutting off an influence essential to secretion, coming from the brain." The observation of Mr. Lawrence, that there existed over the foramen magnum "a soft tumour about equal in size to the end of the thumb," a circumstance of considerable moment in the case, is overlooked in this account. In reasoning on it, Dr. Alison forgets that if it proves any thing it proves too much. The child of course respired. To respiration the sensorial power is necessary.

In the 24th volume of the *Edinburgh Review*, the reader will find the best account of well authenticated cases analogous to the case of Mr. Lawrence, perhaps any where to be met with. In some of these not only the respiration but the more evident sensorial functions existed. In one related by Dr. Heysham of Carlisle, there was nothing in place of brain but a brown vascular mass. "There was not the least appearance of a cerebrum, cerebellum, or any medullary substance whatever; yet this child was full grown, well-proportioned, and seemed in perfect health. It moved its limbs with agility, swallowed well, and took a sufficient quantity of nourishment. All the external organs of sense were perfect. The eyes were as full and lively as in any other child of the same age. The iris evidently contracted on the application of light, and from some other observations which Dr. Heysham then made, he had no doubt that vision was perfect." (Page 447.) A similar case is given on the authority of Sir Everard Home, where the only appearance of brain was a little medullary pulp behind the orbits. Are we to conclude from such cases, that the sensorial power has no dependance on the brain?

The following are the only facts with which I am acquainted, that tend to throw light on this very obscure subject. In other instances we see the functions of vital organs going on, when, as far as we can judge by inspecting the organs, the structure on which these functions depend is wholly lost. Those who are in the habit of seeing the dissection of phthisical subjects, know how strikingly this observation is sometimes illustrated by the state of

the lungs. The brain, it appears from many observations, admits under certain circumstances of a great degree of distension and compression, without its functions being materially deranged. If we suppose that it possesses these properties to such a degree as occasionally to admit of being thinned to a membrane, or contracted to a small nob, without its functions being deranged, the above cases may be explained. It also deserves particular attention in considering such cases, that it appears from the experiments of M. Le Gallois, in which, beginning from the upper part, he gradually sliced off the brain and cerebellum, that the functions of the eighth pair of nerves, on which both the sensorial power employed in respiration, and the power of secretion in the viscera, as far as the brain is concerned, chiefly depend, continued after the whole of both organs had been removed, except the parts in the immediate neighbourhood of the origin of these nerves, parts hardly admitted to belong to the brain. But in the present state of our knowledge, it would be profitless to pursue this subject farther. It is enough to remind the reader that Dr. Alison's mode of reasoning from it is inadmissible. With respect to the fact that considerable parts of the brain have been suddenly lost without materially affecting secretion, the same answer applies, neither do such losses of brain in general materially affect the sensorial power. Were we to attempt to explain this, we might say, in conformity with the opinion of some writers, that it arises from the same cause that the loss of an eye or ear does not materially affect the sight or hearing, nor the loss of a kidney the secretion of urine.

Much as Dr. Alison and I differ in many respects, I cannot conclude without calling your attention to what appears to me, the very correct view taken by him of the question respecting the identity of the nervous influence and galvanism. Those who have hitherto objected to my conclusion from the experiments in question,* either maintain, that we must rather suppose the existence

* I have much pleasure in referring to a paper in the last number of the *London Medical and Physical Journal*, by Clarke Abel, M. D. F. R. S. Physician at Brighton, in which he gives an account of very careful and well conducted repetitions of my galvanic experiments on the lungs and stomach, made in the presence of several medical gentlemen. In one of these repetitions he employed a comparatively weak, and in the other a considerable power, of galvanism. In the former, although the galvanism was not of sufficient power to occasion evident digestion of the food, the constant effects of dividing the eighth pair of nerves, the efforts to vomit, and the difficulty of breathing, were prevented by it. These symptoms occurring when it was discontinued, and disappearing on its re-application. "The respiration of the ani-

of a power capable of the most complicated functions of the nervous influence, yet distinct from it, than admit the identity of these powers; and that, without attempting to show that in any of their properties they are incompatible with each other; an instance of more erroneous reasoning than which it would, as far as I am capable of judging, be impossible to adduce; or that galvanism excites the nerves of the part to prepare nervous influence, and thus perform the office of the brain or spinal marrow, of which every fact relating to their functions proves them incapable. We might as well, I conceive, suppose a bone, as a nerve capable of preparing this influence. They are mere channels through which it passes, and when the little they retain after their separation from the brain and spinal marrow is exhausted, they have no capability of forming more. Dr. Alison, far from adopting either of these opinions, declares without hesitation, that the only way of refuting my inference is to prove that the nervous influence is not essential to secretion. "Here we have," he observes, "the nervous influence cut off, and yet secretion going on. On the supposition that the nervous influence is really essential to secretion, this can only be explained by supposing the galvanic influence which is substituted for it to be really the same thing. If, therefore, we can make it probable that the changes which occur in the nervous system are not galvanic actions, we need go no farther after these experiments in order to show that the nervous system is not necessary to secretion:" and in page 119, "if

mal," he observes, "continued quite free during the experiment, except when the disengagement of the nerves from the tin foil rendered a short suspension of the galvanism necessary during their re-adjustment." "The non-galvanized rabbit breathed with difficulty, wheezed audibly, and made frequent attempts to vomit." In the latter experiment in which the greater power of galvanism was employed, digestion went on as in my experiments. The galvanism proved fatal in nine hours. He remarks the greater moisture of the cardiac portion of the food, which is peculiarly characteristic of the healthy state of the stomach in the rabbit.—See the first section of Chapter seven, part second, of my *Inquiry*. "The pyloric part of the mass," he observes, "was of a brownish colour and resembled the contents of a healthy rabbit's stomach, except towards the centre, where it had a greenish maculated appearance, seemingly from the mixture of parsley in different states of digestion, while the stomach of the non-galvanized rabbit contained only a continuous mass of masticated parsley." He closes his account of this experiment with the following observations: "From this experiment it seems legitimate to infer, that galvanism of a certain power passed in a continued stream through the thoracic and gastric portions of the eighth pair of nerves, after their division, will produce the phenomena of digestion. It entirely corresponds, both in its details and results, with the experiments of Dr. Wilson Philip."

they," that is the changes in the nervous system, "be not galvanic, Dr. Wilson Philip's experiment, above referred to, becomes an *experimentum crucis* against their being essential to secretion."

According to this view of the subject, which has always appeared to me the only correct one, when we prove that after deranging the functions of a secreting surface by dividing its nerves, we can restore its healthy state by galvanism, we prove the identity of this power with that on which secretion depends; and that secretion depends on the nervous power, the facts just laid before the reader, as far as I am able to judge, appear sufficiently to evince.

The experiment alluded to in the above passages quoted from Dr. Alison's paper, even by his admission, being an *experimentum crucis* of the identity of galvanism and the secreting power, must, except on the supposition that secretion does not depend on the nervous influence, do away all that he says respecting our not being able to point out how galvanism is excited, or how it effects so great a variety of changes in the animal body. We must of course admit that our knowledge of this principle is very limited;* but we see nothing in the phenomena of the nervous influence, on the supposition that it is galvanism, more extraordinary than many analogous facts. How is electricity collected and subjected to the will of electric animals, so that they cannot only evolve it at pleasure, but according to M. Humboldt's experiments, direct it to any particular part of the body? How does it happen, that the electricity of the gymnotus, which is strong enough to deprive a horse of power, cannot affect the nicest electrometer? Can any one who has read the experiments of Sir James Hall on the various results obtained under different circumstances by the agency of caloric, even on the same substances, and those few in number, be surprised, that a variety of products should be the results of the agency of galvanism, in the animal body, of which the component parts are so numerous and so differently circumstanced?

* When Dr. Alison, towards the end of his paper, accuses me of supporting one hypothesis by another, he forgets that what I say on the subject under discussion is thrown out as a mere suggestion, namely, that on the supposition of the nervous influence being galvanism the difficulties stated are explicable: on the supposition of its being something no-where existing, but when formed by the brain and spinal marrow, they are wholly inexplicable; referring, however, to future investigations for any knowledge that may be acquired on the subject. I allude chiefly to the phenomena of the fœtus previous to the formation of any part of the brain and spinal marrow.

Case of Contracted Rectum. Communicated, by letter, to HENRY DAVIES, Lecturer on Midwifery, Conduit Street. *With Remarks* by Mr. DAVIES.

[From the London Medical Repository, for Nov. 1820.]

The following case of simple contraction of the rectum, which I now submit to your inspection, (and which you are at liberty to make what use you may think proper of,) was accompanied throughout by the most deplorable sufferings; such as I am persuaded few professional men, if any, would be inclined (*a priori*) to attribute to such a disease. I shall either intersperse a few remarks as I proceed, or keep them in reserve for a second communication. Being in the public service, (the army,) I was, in May, 1812, ordered, with my regiment, to embark for the West Indies, at which station we arrived, and formed part of the garrison of Barbadoes till January, 1813; during which time I was in perfect health, never having been confined a day. At the latter period I was ordered to join another regiment, at St. Croix, one of the most beautiful of the Leeward Islands, indeed so much so, as to be called the garden of these islands. About three weeks after my arrival at this latter station, I was overtaken, rather late in the evening, by one of those peculiarly heavy showers of rain; and neglecting, on my gaining home, the necessary precautions in these climates, I was confined by an indisposition of some days to my quarters. During my convalescence, and before I was enabled to resume my professional duties, I went to inspect the bodies of two men who had died from the yellow fever. Having finished my inspection of the one, I made the necessary incision through the abdominal parietes of the other, when I instantly inhaled a gas, evolved (from the body) through the artificial opening I had made, that almost suffocated me. Being fully aware of the effects likely to occur from such a cause, and perhaps the susceptibility of the body being increased by the depressing powers of the mind, foreboding ill, I directly resigned my scalpel, returned to my room, and was visited indeed by a very severe attack of this endemic, which, though fatal to very many, I had the good fortune to recover from. It was during this attack that the Surgeon of the regiment prescribed repeated doses of powerful cathartics; and it was only on the remission of more urgent symptoms that I first felt pain and uneasiness about the top of the sacrum, with a sense of weight and bearing down on the lower intestines, accompanied also by a difficulty in expelling any fæces. These increasing, I was obliged to sit over

the steam of hot water, and, by repeated strong inspirations, to depress the viscera. At those periods, the pain was so excruciating, that I frequently called out loud enough to be heard some distance, which at times brought some of my brother officers about me. After thus straining over the relaxing power of the steam a longer or shorter time, I succeeded in the expulsion of small quantities of a worm-like form; and on rising from the night-chair, (ever with the sensation of remaining fæces,) piles of extraordinary size were observed, which, being considered the cause of my sufferings, were occasionally lanced. So much did I dread the necessity of fæcal expulsions, on the account of the attempts overwhelming me with pain, that I endeavoured to delay them as long as possible. Whenever I held my breath a little I could feel an unnatural resistance, and even in attempting the erect position. The posture of all others (and you may be assured I tried every varying movement) which gave me any ease, or rather respite, from continual pain, was the one on my elbows and knees, on which I used to crawl about night and day for weeks. I found, when I was so situated, the uncomfortable sense of bearing down, &c. left me; but if I attempted the erect position, or to place the pelvis lower than my shoulders, the sense of weight, &c. on the sacrum immediately returned. No sleep, however short, was ever obtained, but by opium; and when I could get at it myself, I used to take large quantities. The sense of resistance on holding the breath was felt only about the top of the sacrum, where the rectum is fastened down; and there, on going to the night chair, was the whole of my excessive suffering referrible, increased, as it was, by the necessity of straining to such a degree as I was always obliged, even to obtain the smallest evacuation. Strange, though I had every professional assistance, or rather attention, and was visited by many, I may say most in the island, never the most distant hint of a diseased rectum was either given by them, or thought of by myself. The piles were occasionally lanced; and I was latterly advised to use sedative enemas, composed of the tinct. opii, ʒi. et muscil. amyli, ℥v. vel ʒvi. pro re natâ. From this I found temporary relief; and after thus enduring for upwards of six weeks, I obtained leave to return to England. The vessel had (fortunately) good accommodation; and I only moved out of my birth from necessity, now and then lancing the piles, still believed to be the cause of my illness, and continuing my enemas, from which latter I found signal benefit, and always resorted thereto on any increase of irritability. I landed at Southampton, where I was compelled to send for professional aid, which only

added saline aperients to my medical list. I was also attended by a nurse. After remaining about ten days there, I thought myself able to resume my journey to Devon; and just before entering the coach, I took a large quantum of tinct. opii in enema, and had a few half-grain pills of the opium purificat. if I should require them. The first dose kept me easy till I reached Exeter; on leaving which, finding myself getting worse, I halted at Chudleigh, where, the next day, my relatives met me. On my leave of absence expiring, (after having fruitlessly consulted other professional aid,) finding I could not possibly return to the West Indies, I was, by the great kindness of the late director general of our department, (J. Weir, Esq.) ordered to Guernsey, where, after a time, I arrived, still accompanied by my inveterate foe; and continued the course of palliative means as before. Being confined to my bed still, I used, when a respite from pain allowed, to endeavour to withdraw the mind from its constant reverie, and wished to be released from such a suffering body, by looking over the newspapers; and it was after finishing the more important parts of one, that I cast my eye over the page of advertisements, when among others, I found one noticing a publication (I think by Copeland) on stricture of the recum. It flashed like lightning on my mind, that I had now unmasked my terrible enemy; and I directly decided on sounding the rectum, by the introduction of a bougie; but after many attempts I failed, from the increased irritation not being bearable. However, on reflection, I had, the next day, a still smaller one, which, after a while, was passed through the contraction; and the relief I immediately felt was such, that I slept (with the bougie remaining introduced,) for the first time, without opium. On the withdrawing the bougie, a quantity of blood followed, accompanied by such of the alvine accumulations as could pass through the opening made. The bougie was gradually increased, and on each successive withdrawing was followed by immense discharges, that had accumulated not only naturally, but by the various aperients I had been recommended, every one of which had only been adding to the disease, which most assuredly I should have died by, or rather from, a rupture of the intestines, from excessive distention, produced by an accumulated mass, unable to pass the contracted part.

By the use of the bougie, and attention to the disease, I gradually improved in health; and I at this present time only occasionally introduce the rectum bougie, or take aperients, thereby preventing constipation on the one hand, and accumulation on the other.

This case of mine I conceive to be one of simple contraction

of the gut, arising from the effect of powerful purgatives. My not feeling the symptoms until more urgent ones had subsided, prevents my knowledge of its earlier indications of approach. The sensations of having more fæcal matter to expel on rising from the night chair, as also the relief from the irritation of such feelings as I invariably experienced on placing myself on my knees and elbows, so as to keep the pelvis higher than the rest of my body, I attribute to the having forced down the higher part of the gut into the lower and larger, and which of itself gradually, as the power by straining, was taken off, relieved itself. I conceive the inner coat of the rectum to have been greatly relaxed by the united force of straining and the steam of hot water, which I was always necessitated to have recourse to—and this possibly might have occasioned those external tumours, so frequently lanced. It is almost inexplicable, when the symptoms were so well marked, and so steadily enforced on the attention of every medical gentleman who visited me, that the most distant hint of the real malady was never offered; yet I ought to be the last to be surprised, as it was never suspected by myself, though, in addition to symptoms offered to the attention only of others, they were presented to myself by two such as one would think enough to fix the exertion of the mind for their removal, namely, pain and suffering. On the passage, I used sedative enemas. At Southampton, the professional advice was aperients, from a Physician and Surgeon. At Plymouth, though examined by a professional friend, by the finger in ano, yet it was reported as not diseased, and aperients again recommended.

At Guernsey, by accident, (as stated) I first suspected the disease, and sounded the rectum with an urethra bougie of the largest diameter: this failed: the next day I used a small size, and succeeded. The quantity evacuated was immense. Indeed, I have often wondered at the capacity the gut must have attained. Relative to bougies, I always used the plaister, till I obtained some of the elastic; which latter, although in appearance they have every advantage, yet in their actual use I could not continue; as I found on introducing them and leaving them even for a short time in the gut, they were not only extremely difficult, but very painful in their extraction; they felt as if I was drawing out the gut itself, so closely did the temperature of the part make them adhere: I was obliged to keep turning them round in the action of withdrawing them; and on inspection they appeared sticky, and exactly as if they had been held over the steam of boiling water; though I oiled them, &c. prior to introduction. I could introduce them and withdraw them instantly,

but no more; I therefore disapprove of them, and never recommend them to others. I should not speak so decidedly of their inferiority, but from having given them a fair trial on my own person, in this most painful complaint, and which I have had from March, 1813, (being then twenty-four years of age.) I think if gentlemen, on introducing an elastic and a plaister bougie, at different times, on the same patient, leaving it a quarter of an hour or more in the canal, and on withdrawing them, make the inquiry, the latter will most likely be preferred. I have found the plaister bougies, when made in a rough manner, also painful in the introduction. Many who make articles such as these without any conception of their use, or such conception or knowledge only as merely relates to the part they are intended for, think any thing, however rough, or however made, will do very well, and keep them accordingly. I had occasion to send from the country to London for four plaister bougies for the rectum, for my personal use, and received four such as I could by no means use. They were partially covered, and no more; so that the cloth came in rags on their tops. This to me in the country was a source of vexation only, as I would not attempt their use. But, on the contrary, a completely covered, and well-finished plaister bougie, I found I could introduce easily, and keep it in the passage as long as I wished, as the longer I left it, it became the more easily retained by taking the form of the gut; and on its being withdrawn, (perhaps owing to the heat of the part in some measure acting on the plaister,) it gave me not the slightest pain, or that feeling of drawing the gut itself with it, which the elastic invariably did. Being quite satisfied of the utility of the plaister bougies, when well finished, I have tried none other, but as above

The plan of treatment most beneficial is, in the morning to inject an enema of cold water; then, after emptying the rectum by the above, to inject an enema of tr. opii and mucilag. amyli, which is retained. In the evening the same. The bougie and aperients occasionally.

Remarks.—The foregoing case was transmitted to me by the gentleman who was the subject of it, on my mentioning the various train of symptoms and sympathetic affections that were produced from habitual costiveness and loaded rectum; and that in females more particularly the constrictive power of these parts was further increased from education and habit

In these cases drastic purgatives, so far from affording relief, are extremely prejudicial, by adding to the quantity of fæces already accumulated.

I believe that patients are often deceived, and very often de-

ceive their medical advisers, by informing them that their bowels are open, when the rectum is blocked up with fæces: this, from the irritation it produces, causes an increased mucous secretion in the lower part of the canal, which is evacuated three or four times a day with a little fæces:—this removes or diminishes the temporary distention, and causes them to believe that their bowels are relaxed; on more particular inquiry it will be found that these patients rarely void a natural stool. I may mention a case or two as illustrative of this.

A. D. complained of a bearing down of the womb; from which she said she had suffered two or three years past, and for which she had used various remedies without benefit; said that her bowels were loose, her catamenia regular, she felt a something falling through her; and that she suffered much uneasiness both generally and locally; her countenance was anxious and hollow.

On examination, *per vaginam*, the uterus was found in its natural situation; the vagina was blocked up apparently by a tumour projecting from behind forwards, which appeared to be from distended rectum encroaching into that canal; the fæces were evacuated by aid of enemas; oily purgatives were exhibited; a bougie was passed into the rectum daily; and the tepid salt water hip-bath was used to allay irritation. After a few weeks the uneasiness and bearing down sensations went off. The rectum got a habit of evacuating its contents, by the occasional aid of oily purgatives and the use of the bougie; (she uses a common wax candle.) Six months after the commencement of this treatment, she said that she had not enjoyed such good health for some years past, and in which latter state her health has remained now upwards of two years.

I was requested by a medical friend to see a lady, for a disease of these parts, attended with a violent leucorrhœa.

On examination, the vagina was felt relaxed and flabby; the rectum, on its posterior surface, like a hardened cord. On introducing the finger *per anum*, it passed with difficulty, and was girt at its extremity, causing the patient a good deal of pain, and she exclaimed, "that is the seat of my malady."

A full-sized urethra bougie was introduced the next day. The day following reports, that she has been much easier than usual, and that she had not passed so natural a stool for many months.

This case is still under treatment. An enema is administered daily, through a full-sized pipe, and thrown slowly up into the intestine. A bougie is used on the alternate days, gradually increasing the size.

With regard to the difference between the elastic gum and

plaister bougie, a case occurred to me, which in some measure confirms Mr. ——'s observation.

Some years since, during the treatment of a stricture of the urethra, which was destroyed by caustic, the patient from some circumstances not being able to attend regularly, had an elastic gum bougie to pass. He passed it in the morning, while in bed, after retaining it in the urethra for half an hour. He was unable to withdraw it. By using some exertion, the bougie broke, leaving the broken portion within the urethra. This caused him a good deal of alarm, (fortunately he possessed the least irritable urethra I ever saw.) On immersing the penis in warm water, he was enabled to expel the bougie with the stream of urine. I attributed this occurrence, at the time, to some fault in the manufacture of the instrument, though I was not able to discover any. Might it not then be retained, as the foregoing case suggests, from losing its moisture while in the urethra?

On the Causes of the Vacuity of the Arteries after death. By James Carson, M. D. of Liverpool. *Communicated by* Sir James Macgrigor.

[From the Medico-Chirurgical Transactions, Vol. XI.]

The Harveian Doctrine of the circulation of the blood, may, I think, be divided into two parts. The first is the course of the blood; the second the explanation of the causes by which it is moved in that course. The arguments advanced by Dr. Harvey on the first of these points, the course of the blood, must, I think, convince every candid enquirer that the blood is conveyed from the heart by the arteries, and returned to it again by the veins. But the illustrious discoverer has not been so fortunate in the second part of his great undertaking. In maintaining that the projectile power of being of a different colour from that discharged, the ventricles of the heart propels the blood through the whole of the arterial and venous canals, and, after having discharged this office, opens the auricular chambers by means of the returned blood, he lays claim to effects which are not warranted from the supposed causes, and which are inconsistent with the established laws of hydrostatics; laws by which the blood, as well as every other fluid, must be governed. But this part of the doctrine of Harvey, admitting it to be philosophically correct, must be rejected in its present application as affording no satisfactory solution of the phenomena. The followers of Harvey,

adopting as the foundation of their argument his doctrine of a *vis a tergo*, have enlisted the arteries into the aid of the heart, and contend that the blood is circulated by the combined agency of these powers; but the difficulty is not removed by the supposition; it is only shifted to another part of the system, and the phenomena are not better explained.

It has often created surprise that a doctrine so simple in appearance as the circulation of blood, and pointed out so plainly as we now suppose by facts of daily occurrence, should have been reserved for the discovery of modern times. The knowledge of the circulation seems to have been retarded by one remarkable phenomenon. The arteries, which are now known to constitute the channel of the blood for one-half of its course, were uniformly found to be devoid of that fluid after death. That vessels in which no blood was to be found by the most careful examination after death, should be the constant receptacles of it during life, is a supposition that would scarcely suggest itself to the anatomist; and, if suggested, would soon be rejected from the list of probable conjectures. The arteries were supposed to be the recipients of a vital ærial fluid. One fact indeed of frequent occurrence seemed to be at variance with this belief; and, if the effect of it had not been defeated by an hypothesis, it must, we would suppose, have led to the truth. An artery, when wounded, was constantly observed to discharge blood from the living frame. But the ancient physiologists, unwilling perhaps to degrade the arteries from what they conceived to be their more refined office, and conceiving it impossible, that if these vessels contained blood during life, they could be deprived of it by death, contended that the discharge of blood from a wounded artery was no proof that the vessel contained any blood before it was wounded, but that the injury and pain given by the wound drew blood from other quarters into vessels which contained none before; and that the impetuosity and obstinacy of the discharge arose from the conflict between this foreign intruder and the native aerial spirit. What gave greater plausibility to this supposition was, that the blood shed by the arteries, from the veins, seemed to be not the natural product of the body, but the factitious result of this imagined conflict.

The condition of the arteries after death was urged confidently by the opponents of Harvey as an insuperable objection to the doctrine of the circulation, upon its first promulgation; and was unquestionably one of the greatest obstacles found in the path of the discoverer; and, after all, the explanation given by this celebrated man of the powers by the operation of which the arteries

are found empty after death, is most unsatisfactory. He says that the left ventricle, in the last struggles of life, continues to propel after it has ceased to receive blood, and that, by these final propulsions, the blood at the time in the arteries is driven into the veins; and he further asserts, in support of this explanation, that the arteries of animals, who have been killed by submersion in cold water or by mephitic air, will be found to contain blood after death as well as the veins. But there can be nothing more evident, than that the heart, by these abortive impulses, could only drive blood through the more remote portions of the arterial system by some impinged medium; and that this medium, which, upon the hypothesis of Dr. Harvey, could only be blood, must still remain in the arteries. But defective as this explanation is, it has the further imperfection of being built upon an hypothesis that is altogether destitute of proof. This hypothesis is, that the heart continues to propel after it has ceased to receive blood. The heart on the contrary is generally found full of blood after death. The converse, therefore, of what is maintained by Dr. Harvey would appear to be the truth, that the heart retained the capacity of receiving blood, after it had lost the power of discharging it. The statement also by which Dr. Harvey has supported his opinion, has not been confirmed by observation. The arteries of animals which have been killed suddenly by submersion in cold water, or by any of the ways enumerated by Dr. Harvey, have been found equally empty of blood with those of animals killed by lingering disease. Into such a labyrinth of error and evasion will men of the most powerful minds be led when they attempt to shape nature to a conformity with their opinions.

No new light has been thrown upon this subject by the followers of Harvey; and in general it may be observed that after the lapse of two centuries, and though a thousand volumes have been written, and thousands of animals slaughtered to elucidate the subject, the doctrine of the circulation has descended to our times nearly in the same state in which it came from the hands of the original discoverer.

Mr. George Ker, an ingenious and learned surgeon in Aberdeen, struck with the defectiveness and inapplicability of the explanation given by Dr. Harvey and his followers of this remarkable phenomenon, as well as of many others, has in a late publication boldly denied the doctrine of the circulation of the blood altogether, and become the acute, strenuous, and most confident advocate of the opinions of the ancient physiologists respecting the condition of the blood in the living system, and the uses of the arteries.

All the objections urged by Mr. Ker against the circulation had been stated by myself as objections, not against the doctrine of the circulation itself, which I believe to be founded on a basis never to be shaken, but against the causes assigned for the accomplishment of that effect, at least two years before the appearance of Mr. Ker's work, but unquestionably without the knowledge of that gentleman. The causes which I have ventured to assign to the motion of the blood, will, in process of time, I trust, be found to have a real existence in nature, to be adequate to the effects assigned to them, to have been fitly applied, to afford a plain and satisfactory explication of the various phenomena, to answer fully all Mr. Ker's objections, and, in a word, to vindicate a theory, which does so much honour to our country, from all future opposition.

The objection principally dwelt upon by Mr. Ker, the emptiness of the arteries after death, did not pass unnoticed, as may be seen on reference to the inquiry into the causes of the motion of the blood; but as I had not then had an opportunity of submitting my opinions to the test of experiment, I did not state them with that confidence which I even then felt in their truth. I have lately had that opportunity, and I now propose to state the result.

The chief, if not the whole, of the movements of the animal machine seem to be the effect of two powers acting either conjunctly or separately. These are elasticity and irritability. The elasticity of the parts which possess this property is inherent in the structure, and is independent of life. Irritability, which is the property of the muscular substance, is the concomitant of life, and ceases with it. The movements, which are the usual result of a combination of those powers, will not wholly cease at death. The elasticity will still continue to operate; and the result will be different, either from that which would be produced by their combined agency, or from that which would arise from their synchronous destruction.

The motion of the blood seems to be the result of the contractions arising from the irritability of the heart and arteries, and of the resilience arising from the elasticity of the arteries and of the lungs. One class only of these powers is destroyed by death. The resilience of the lungs and of the coats of the arteries possess then an uncontrolled operation.

The resilience of the lungs removes a part of the pressure of the atmosphere from the internal surface of the chest, and perhaps from the internal surface of the vessels by which they are penetrated. To restore to the parts within the chest an equality

of pressure with that of the substances without it, the adjoining liquid and less fixed parts of the body will be pressed through every channel that offers into the chest. What is called a vacuum will in effect be made in the chest by the elasticity of the lungs. There will therefore be a draining from all parts of the body towards the chest, to fill up this vacuum. As thus the causes which return the blood to the heart continue to operate, after the heart, the great engine by which it is discharged, has terminated its labours, a greater quantity of blood will be necessarily collected in the neighbourhood of the heart after death, than existed there before it

Various circumstances may intervene to fix the channels in which the blood will flow in its course towards the heart after death. The arteries are powerfully elastic, and when their coats are relieved from the distending force of the heart, become of a diminished calibre. Valves stationed at the roots of the arteries prevent the return of blood from these vessels into the chest. After the small part of the aortic system intervening between the heart and the confines of the chest shall have been, as it usually is found to be, filled with blood, the blood in the rest of this system will sustain no diminution of pressure on the side of the heart.

No obstacle exists in the way of the blood in its course to the chest through the veins. No valves are stationed at the roots of these vessels, and the blood finds an unobstructed course from the roots of the cava into the auricles, from that possibly into the right ventricle and into the pulmonary arteries, and thence into the pulmonary veins. The heart, particularly the auricles and the large venous trunks, the coats of which being inelastic and easily dilatable, being all placed within what may be called the vacuum of the chest, will be distended to their utmost capacity. The additional blood requisite for this purpose can be drawn only from the veins. The place of the blood taken from one part of the venous system will be supplied by that from another. The termination of this process will be the emptying of the arteries into the veins.

If the preceding argument be correct and founded upon true principles, it would follow that, were the elastic powers employed in the motion of the blood disengaged before the muscular powers had ceased to act, or synchronously with that event, a distribution of the blood would be found to exist after death different from that which is now usually observed. The blood would not be found so extraordinarily accumulated in the right auricle, and in all the veins belonging to the system of the cava within the chest,

and at the approaches to it; and the arteries and capillary vessels would contain the proportion which upon the supposition of the Harveian theory must have flowed in them before death. I have not been able to devise any method of annihilating before death the elastic influence of the arteries, and therefore some allowance must be made in the phenomena which are to be brought into view for that cause; but I have been successful in removing from all influence after death the elastic power of the lungs, by far the most efficient, by the manner in which the animals were killed in the following experiments. Death was in these cases effected by inducing a previous collapse of the lungs, which was done by making openings into the chest of the living animal, and exposing the external surface of the lungs to the free access of the air.

In the first experiment made with this intention, an opening was made about an inch in length between a pair of the ribs on each side. I expected that sudden death would be the effect of these openings; but in this respect I was disappointed, and at first not a little perplexed. This disappointment I experienced particularly in the case of a large dog. This animal, as I supposed, after the collapse of the lungs, by pressing up the diaphragm by means of the abdominal muscles as far as possible, and then by a rapid and forcible contraction of the intercostal muscles, accompanied by a rapid and forcible contraction of the diaphragm, was enabled to rarefy the air contained between the external surface of the lungs and the chest to such a degree as to occasion a partial dilatation of the lungs, and an imperfect expansion of the heart. Thus life was painfully prolonged for nearly twenty minutes. The sufferings sustained by this animal for so long a period prevented a repetition of the experiment on any other animal in the same manner. The result was in other respects satisfactory. Though the death was tedious, it was ultimately produced by the collapse of the lungs. I had previously performed the same experiment upon a rabbit and a cat. In these the death, though not sudden, was neither so tedious, nor to appearance so distressing as in the case of the dog.

The same appearances were, on dissection, exhibited by all. The muscles were remarkably red; and, when an incision was made into them, they poured out blood. The membranous parts exhibited the blood-vessels as if they had been fully and nicely injected; forming anastomoses which appeared like a netting made of red threads. I was particularly struck with the coats of the intestines; instead of exhibiting the usual pale smooth surface without the vestige almost of a single blood-vessel, they appeared to be composed of a red colored netting, the meshes of which varied

greatly both in dimension and in form. The liver was like red morocco. The flesh of the rabbit, which is usually white, was in this case of a reddish color, and all the dissected parts became wet with effused blood. The heart contained little blood. When the chest was opened, and the large vessels it contains were divided, a small quantity of blood only was effused, not much more indeed than from the other parts of the body. The aorta and large arteries, in all the instances, were pale externally, while the accompanying veins were of a blue color. A part of the descending aorta, above the bifurcation of the iliacs, after its extremities had been secured by ligatures, was cut out, and was found to contain a small cylinder of blood generally coagulated. So it appears that the white color of the arteries did not arise from their being empty of blood, but from the want of transparency of their coats. With respect to the vessels, which the stomach, the intestines, and the membranous parts exhibited in so beautiful a manner, I do not pretend to say what part of them may have been arteries. Supposing, however, that these carcases exhibited the distribution of the blood as it really existed in life, it is very evident that the blood, not only of the larger arteries, but of the smaller vessels, whether they be arteries or veins, must, in consequence of death produced in the usual way, be emptied into the large veins. I think it probable, however, that what are called the capillary vessels, may, in consequence of this mode of killing the animal, be found to contain more blood than the share that belonged to them during life; for the elasticity of the coats of the arteries, the effect of which, as I before stated, I had not been able to devise any plan of counteracting, by contracting the bore of these vessels, would propel a part of the blood that was flowing in them at the moment of death into the vessels, the coats of which were inelastic and dilatable.

For the purpose of comparing the appearances of two animals of the same kind, killed in different ways, two rabbits were killed on the 20th of September, 1819, one of them by causing the lungs to collapse before death, the other after a different manner. In the case of the first of these rabbits, the belly was opened freely from the scrobiculus cordis nearly to the pelvis, and the lower surface of the diaphragm exposed to view. An opening, fit to admit my two fingers, was made through the muscular part of the diaphragm on each side. The sound of air rushing through the orifices, announced the collapse of the lungs. As the animal possessed no power of contracting the openings made in the diaphragm; as its struggles would probably tend to widen them still more; and as therefore the capacity of dilating the lungs, even in the smallest

degree, no longer remained, the animal instantly died. The appearances exhibited by the dissection of this rabbit, were precisely similar to those already described of the bodies of animals killed by the previous collapse of the lungs. The vessels, particularly of the intestines, stomach and mesentery, were very distinct and full of blood, forming frequent anastomoses with each other, in the way already described. The flesh was reddish, and when cut into, bled. The heart and vessels about it contained only a moderate quantity of blood; for scarcely any blood was found, after the division of the vessels, to have been effused into the shell of the chest. The other rabbit was killed by thrusting a sharp instrument between the vertebræ of the neck. It died instantly, and was immediately opened. Scarcely was the vestige of a blood-vessel to be observed on the surface of the intestines or stomach, which had a pale appearance, excepting where they were tinged by the color of their contents. The membranes scarcely exhibited any traces of vascularity. The flesh was white, and when cut into, appeared to be dry, discharging at some parts a drop or two of blood. The liver was of a dusky brown color. The trunks of the veins were swollen and rounded; whereas in the other rabbit they appeared flat, and to contain a thin layer of blood. A considerable quantity of blood was found in the shell of the chest, after it had been opened, and the large vessels it contains divided.

A few days after, a sheep was killed in the same manner as the first of the above-mentioned rabbits. When the openings were made through the diaphragm, the sound of air rushing into the chest, announced still more plainly the fatal collapse of the lungs, and the last expiration. The animal, after making a few heavings with the chest, became lifeless. Several other sheep had been killed at the same place at that time, and there was an opportunity of comparing the carcase of this animal with those of the others. Scarcely any traces of the smaller vessels were observable in the stomach, intestines, peritoneum or mesentery of the other sheep, while in the same parts of this animal they appeared in great abundance, and as injected with red wax. The appearance was so remarkable as to strike the butchers, and the persons whose attention I directed to it, with surprise. The color of the fat was browner than usual. The muscles of this animal being at all times red, did not exhibit so marked a difference as in the case of the rabbits, but when cut into they discharged blood. The larger arteries, where I had an opportunity of seeing them, contained a small cylinder of coagulated blood. The flat and tape-like appearance of the large veins, which I had observed

in the rabbit killed in the same manner, was in this case very remarkable.

The results of these experiments I think fully warrant the conclusion, that the difference of the distribution of the blood after death from that in which, according to the Harveian theory, it must exist in the living system, arises chiefly from the elastic power of the lungs; and that the emptiness of the arteries and of the smaller vessels observed after death, admits of a satisfactory explanation from the supposed operation of this cause, combined with that of the elasticity of the arterial canals.

Before I conclude this paper, I am anxious to express my hope that some benefit may result to anatomy from the examination of animals killed by the collapse of the lungs; in particular a better chance seems to be promised by it of tracing the vascular system to its various terminations. According to the Harveian doctrine, the blood must flow from the minute and ultimate branches of the arteries into the corresponding branches of the veins. But the knowledge of the manner in which the vessels form the communication necessary for this purpose, is still a desideratum in medical science; and, as in all the ordinary modes of death, these vessels are always deprived of their contents; and, as in these circumstances, the knife of the anatomist and the microscope, though directed by all the colorings which the art of injecting can supply, have been found incapable of bringing this union into view, it was likely to have remained so. But the examination of animals in which the smallest vessels contain at least their full proportion of the red fluid that filled them before death, seems to hold forth the hope of some more satisfactory knowledge being attainable in this dark and mysterious part of physiology.

Liverpool, October 22, 1819.

On the Native Country of the Potato, and on some American Plants. Communicated by A. B. Lambert, Esq., F. R. S., *&c. &c.*

[From the Quarterly Journal of Science and the Arts, for Oct. 1820.]

It has long been a desideratum among botanists to ascertain the native country of the potato, *Solanum tuberosum*. I beg leave now to offer some communications on that subject, which I have lately received in a letter from the celebrated author of the *Flora Peruviana*, Don Jose Pavon, who resided many years in South America, dated Madrid, September 23, 1817, who says, "The

Solanum tuberosum grows wild in the environs of Lima, in Peru, and fourteen leagues from Lima on the coast; and I myself have found it wild in the kingdom of Chili. I can assure you this is the truth. The Indians cultivate it in great abundance in Peru and in Chili, and call it *Papas*. There are other wild species, such as *Solanum montanum* which also gives a *radix tuberosa*." Of this I have received from the above mentioned author of the *Flora Peruviana* fine wild specimens with the root. In another letter, dated Madrid, Nov. 10, he again repeats, "I mentioned to you that *Solanum tuberosum* grows spontaneously near Lima, and in the kingdom of Chili, where it was also found by my companions Dombey and Ruiz;" I have lately received from Don Pavon very fine wild specimens of *Solanum tuberosum*, collected by himself in Peru. Don Francisco Zea, companion and friend of the celebrated Mutis, who long resided in South America, assured me, when he was in this country, that he had often found it wild in the forests near Santa Fé de Bogota, observing at the same time, that the reason why Baron de Humboldt had not found it when he was in that country, was, because he had not time to examine those places where it grew. In a letter (addressed to Mr. Frazer, of Sloane-street, Chelsea,) lately received from Dr. Baldwin, an excellent American botanist, who has lately returned from the coast of South America, in the Congress frigate, of the United States, he says, "I found many plants that appeared to be new during my excursion in South America, and had the satisfaction of submitting most of my specimens to M. Bonpland, who has settled himself in the vicinity of Buenos Ayres. It was not the least pleasing of my discoveries to find the famous *Solanum tuberosum* growing spontaneously among the rocks on Monte Video; in a part of the country, too, where this valuable vegetable is not cultivated. I also found it on the same side of the river in the vicinity of Maldonado." A species of *Solanum* was found by Commerson in the neighbourhood of Monte Video, named by Dunal, in his *Synopsis of the Genus Solanum*, page 5, *Solanum Commersonii*, from a specimen preserved in the Museum at Paris. It is also described in the *Supplement to the Encyclopedie Methodique*, Vol. III. p. 746. I have no doubt that this is the same with the plant found by Dr Baldwin. On making inquiry, relating to this plant, of Captain Bowles, who has lately returned from the South American station, and who has resided for a considerable time at Buenos Ayres, he told me he knew it well, and that it is a common weed in the gardens and in the neighbourhood, bearing small tubers like those of the potato, but too bitter for use. Whether this be the original stock

of our common potato improved by cultivation, future observation must determine. Molina, in his *History of Chili*, speaking of the potato, says, "It is indeed found in all the fields of that country, but those plants that grow wild, called by the Indians *Maglia*, produce only very small roots of a bitter taste."

There appeared lately, in the English newspapers, an account of a root which is very much cultivated in *Peru* under the name of *Arracacha*, and which would be a very desirable acquisition to this country. The before-mentioned Don Francisco Antonio Zea, formerly professor of botany at *Madrid*, who has lately arrived in this country from *Santa Fe de Bogota*, (New Grenada) informs me that the *Arracacha* grows abundantly at *Santa Fé*, *Junga* and *Pamplona*, where it is very much cultivated and eaten in the same manner as we do potatoes in this country; and says that the plant which produces it belongs to the natural order *Umbelliferæ*, and that it has a tapering root, about six inches long and two inches thick. I have little doubt that this is the same with the *Heracleum tuberosum, foliis pinnatis; foliolis septenis; floribus radiatis;* of Molina, who gives the following account of it: "This plant resembles very much in its leaves, flowers and seeds, the *Common Cow Parsnip*, but is distinguished from it by the greater number of roots it bears, which are six inches long and three inches thick, of a yellow colour, and of a very agreeable taste."

Don Zea has also afforded me another piece of information, relating to a small species of *Mays* or *Indian corn*, which was introduced last year from France under the name of *Mays de Poulet*, and which ripens its ears two months earlier than the common kind. I had suggested to Mr. Sabine, (who has mentioned in the *Horticultural Transactions,*) that it was very probably the *Zea Caragua* of Molina; and my opinion is now confirmed by Don Zea, who knew it at once on its being shown him. He informs me that it is cultivated in great abundance in Chili by the Indians, particularly in the district called Caragua, whence its name.

I beg leave to mention another communication, also from Don Jose Pavon, relating to a substance which has been several times sent from Spain, under the name of Spanish tinder, resembling very much the Moxa of the Chinese. We never have been able, till now, to ascertain the plant from which it is manufactured, which proves to be *Echinops Strigosus*. There are three different sorts; the first, *Yesca de Espagna*, or *Amadou d'Espagne, O de Cardo de las flores* (*ex floribus;*) the second, *Yesca d'Espagna* or *Amadou d'Espagne O de Cardo de los hogas* (*ex foliis;*) the

third, *Yesca d'Espagna*, or *Amadou d'Espagne O de Cardo de las tallas* (*ex caulibus.*)

I take this opportunity of inserting another observation which I have also received from Spain.

The tree which produces the balsam of Peru, *Myroxylon Peruiferum*, appears to be the same as *Toluifera balsamum*, or that which yields Tolu balsam. The following account of it is given by Don Hippolito Ruix: "The balsam of Quinquina is procured by incision at the beginning of spring, when the showers are gentle, frequent, and short It is collected in bottles, where it keeps liquid for some years in which state it is called white liquid balsam; but when the Indians deposit this liquid in mats or calabashes, which is usually done in Carthagena, and in the mountains of Tolu, after some time it condenses, hardens into resin, and is then denominated dry white balsam of Tolu, by which name it is known in the druggists' shops. Having examined the specimens of *Toluifera balsamum*, from the *herbarium* of Sir Joseph Banks I find them exactly the same as *Myroxylon Peruiferum*, and which was sent to Linnæus by Mutis, as the plant producing the balsam of Peru. I have lately received fine specimens in flower and fruit, and also a specimen of the trunk of the tree with the bark on; it is between three and four inches in length and about three inches in diameter, and was collected by the authors of the *Flora Peruviana.*

Outline of an Inquiry on the Pathology of Consumptive Diseases.

By JOHN ABERCROMBIE, M. D.

PART I.

[From the Edinburgh Medical and Surgical Journal, for Jan. 1821.]

Death from consumption in the British Islands has been estimated, on the most moderate computation, at one-fifth of the whole mortality, and there is much reason to fear that the evil is increasing.* The subject, therefore, is one of intense interest; and it seems most desirable that every effort should be made to enlarge our acquaintance with the pathology of the disease, in the hope that something may be done to diminish, in some degree this frightful mortality.

* In great cities, the proportion is higher. In London, it has been generally reckoned about a fourth, and sometimes nearly as high as a third.

The history of consumption presents a melancholy picture of the uncertainty of medical observation. While the extensive mortality excited the eager attention of physicians in every age, a great variety of remedies, and various modes of treatment were from time to time proposed. The most flattering testimonials were given of their efficacy, and numerous cases were detailed, which, after having exhibited all the usual symptoms of consumption, terminated favourably. Yet each of these remedies, after enjoying an ephemeral reputation, has either forfeited the public confidence, or sunk entirely into oblivion. A slight review of them is calculated to throw considerable light upon this inquiry.*

The oldest, and perhaps the most extensive treatment of consumption, was upon the tonic plan. The remedies of this kind that were chiefly relied on, were, light and nourishing diet, friction, cold-bath, exercise, sea-voyages, preparations of iron, and various medicines of an astringent or stimulating kind, such as guiacum, seneka, the balsams, and the vegetable bitters. Hippocrates seems to have relied chiefly on exercise, in regard to which he directs, that it should be gradually increased to the extent of walking ten or fifteen miles a-day. Aretæus and Celsus advise nearly the same remedies, with very particular directions about diet. Their chief dependence seems to have been on sea-voyages; but Celsus also attaches much importance to walking, friction and bathing. Galen appears to have relied chiefly on bathing, and his directions are long and very minute, in regard to various modes of using it, adapted to different modifications of the disease, especially to the different states of hectic fever. In one case, general immersion is recommended; in another, cold water applied only to the thorax; in a third, a poultice of herbs, moistened with snow water; and a fourth method is described with great minuteness, in which warm air is first employed, then warm water, and lastly, cold water.

In the long period during which the opinions of Galen regulated the medical schools, the same mode of treatment prevailed; and at a more advanced period, when the pathology of the disease came to be better understood, there were added to the general plan remedies of a detergent nature, as they were called, or such as were supposed to cleanse and heal the ulcers of the lungs. Of these the most esteemed were, various preparations of sulphur, balsamic fumigations, myrrh, sarsaparilla, cinchona, preparations of mercury and antimony, balsam of Copaiva, and chalybeate waters. During the period to which this outline refers, various

* See the learned and valuable work of Dr. Young.

other remedies are mentioned by individual writers, many of them of a superstitious kind, and others altogether frivolous; but, upon the whole, it appears that the prevailing treatment of consumption was upon the tonic plan, from the days of Hippocrates to the middle of the seventeenth century; and about this period, the judicious Sydenham did not hesitate to affirm, that "neither mercury in syphilis, nor bark in intermittents, is more effectual than riding in consumption, provided the patient take care to have his linen well aired, and to continue his journey long enough—the longer as he is the more advanced in life."

About the beginning of the eighteenth century seems to have commenced that revolution in medical opinion on this subject, by which the treatment of consumption was changed from the tonic to the antiphlogistic plan. Traces of it, indeed, are found at an earlier period; but it seems to have been about this time that it was brought into general notice, chiefly by the writings of Stahl and his followers. The remedies employed under this system were those calculated to allay vascular action, as repeated small bleedings, antimonials, and other nauseating medicines, emetics, mineral acids, nitre, cicuta, anodynes, and cool spare diet. Sea-voyages were still in repute, but their efficacy was ascribed to the slight and continued nausea. The tonic remedies and balsams, formerly in use, were now condemned, from a dread of exciting febrile or inflammatory action. The chief promoters of the antiphlogistic plan seem to have been Stahl, Dover, Huxham, and Bryan Robertson; and of writers of a later date, we are to reckon in this class the distinguished names of Pringle, Monro, Van Swieten, and Cullen.

During the period, however, to which these observations refer, there were many physicians of no small note, who retained an attachment to the tonic treatment of consumption. Among these may be reckoned Barry, De Haen, Marryat, and others—and among those of later date, Salvadori, May, and Rush of Philadelphia. Salvadori treated consumption by violent exercise, with a liberal allowance of salt meat and wine. May considered it as being entirely a scrofulous disease, to be treated like any other scrofulous ulceration, by tonics, and nourishing diet. Rush contends that consumption is a disease of debility, except some cases in which there are inflammatory symptoms, and his remedies are, a great deal of exercise, bathing, bark, and iron. "The hardships of a military life," he says, "have effected cures in many cases of confirmed consumption, and a riding postman has been relieved more than once by a pursuit of his occupation." Frank also was an advocate for the treatment of consumption by

tonics and nourishment; but, upon the whole, the antiphlogistic plan seems to have been the more prevalent, from the beginning of the last century, till near the end of it, when many of the remedies formerly in use were in a great measure lost sight of in this country, under the growing fame and indiscriminate use of digitalis. In regard to the efficacy of this medicine, there was indeed some difference of opinion among the great number of physicians who employed it, but by some it certainly was considered as nearly a specific, in the incipient stages of consumption; and by one writer it was reported, after a very long trial, to have cured forty cases out of seventy-two, taken indiscriminately at all stages of the disease. It is unnecessary to remark how far this active remedy has lost its reputation in consumptive cases. It may be given occasionally as a palliative, perhaps sometimes as a placebo, but I believe no person in the present day expects it to cure consumption.

On reviewing the mass of observations that have been transmitted to us by the various writers now referred to, we find numerous cases which terminated favourably, after they had exhibited all the usual symptoms of consumption; some of them in circumstances which appeared to be hopeless. Some of these recoveries took place under the most active antiphlogistic treatment; others under the use of tonics and nourishing diet, and not a few with little or no medical treatment, or under the employment of remedies altogether inert and frivolous. From such various and contradictory evidence, on the authority of writers of sound observation and undoubted veracity, what conclusion can be drawn by an unprejudiced inquirer, but that, under the name of consumption, there have been included affections, differing widely from each other, and requiring different, and even opposite modes of treatment;—and that there are disorders which assume many of the symptoms of this alarming disease, while they are in their nature widely different. The inquiry is extensive and most important, and it opens an interesting field of research, in which, though it may appear unpromising, there is certainly the hope of doing something that may ultimately tend to diminish the mortality from chronic affections of the lungs.

By pulmonary consumption, we understand an ulceration of the substance of the lungs of a peculiarly unhealthy character, little, if at all, disposed to heal; and the symptoms which are considered as indicating the presence of it are cough, purulent expectoration, hectic fever, and emaciation. But when we come to investigate the subject minutely, we find reason to believe that there are various affections which present many or all of these

symptoms while they are in their nature remarkably different from consumption; and that they may even be fatal after long protracted disease, and yet the substance of the lungs be found perfectly healthy. On the other hand, we find the true consumptive ulceration running its course, with considerable varieties in the symptoms, and while some of the ordinary symptoms are entirely wanting. The subject, therefore, resolves itself into two parts:—I. The Diseases which resemble Consumption—II. The true consumptive Ulceration.

PART I.

Of the Diseases which resemble Consumption.

When in a young person, about the age when consumption generally appears, and especially in a family which has already suffered from it, we find cough, with uneasiness in breathing, pain referred to some part of the thorax, frequency of pulse, and general weakness—and these symptoms going on for some time, so as to assume a chronic form—we naturally take the alarm, and dread a tendency to consumption. These symptoms, however, may arise from various other affections, some of them as untractable as true consumption, but others affording a more favourable prognosis, and frequently requiring a treatment considerably different. They may be referred to the following heads:

I. Sympathetic Cough, (so called.)
II. Irritation of the Diaphragm by Diseases of the Liver, Spleen, and other parts contiguous to it.
III. Chronic Inflammation and Ulceration of the Larynx.
IV. Chronic Disease of the Mucous Membrane of the Bronchiæ.
V. Chronic Inflammation of the Pleura.
VI. Disease in the Posterior Mediastinum, or the Glands connected with the Lungs.
VII. Ulceration of a Healthy Character from Active Inflammation.
VIII. Hæmoptysis and its Consequences.

Sect. I.—*Of Sympathetic Cough.*

This indefinite term I employ merely for the sake of a name, and to include under it certain anomalous cases, in which obstinate cough has been supposed to arise from causes seated in organs at a distance from the lungs I forbear from speculating

upon the connection; some of the facts are curious. Valsalva describes a case in which the only morbid appearances were in the brain. The peculiar symptom was, that every motion of the head produced a paroxysm of cough. A case somewhat similar is described by Lechelius. Lieutaud relates a fatal case of violent cough, with purulent expectoration, in which the only morbid appearances were in the frontal and occipital sinuses, which were full of pus. Sauvages mentions obstinate cough arising from irritation of the auditory passages, especially the Eustachian tube. "I have never," says De Haen, "observed a more severe, obstinate, and untractable cough than that which affected a young woman, and, having resisted every remedy, ceased after the expulsion of a callous substance from the uterus." Worms in the intestines have been considered by many practitioners as a cause of cough. Every one is familiar with the term *nervous cough*. It is, in general, employed to express any chronic cough that is not consumptive; but of these, we shall afterwards find, there is great variety. But there is a nervous or hysterical cough, which we cannot refer to any of these causes. One of the most singular cases that I have seen of this kind occurred in a young lady, stout and plethoric. She was affected with the most violent cough I ever observed, which occurred in paroxysms, and continued for an hour or more at a time, until respiration was nearly suspended, and the attack often terminated in a state bordering on asphyxia. The paroxysms occurred only once in four or five days, and in the intervals she was in perfect health. After resisting various remedies, it was removed by full bleeding from the arm.

Cough is often supposed to arise from the *stomach*. The subject is extremely obscure, but by no means unworthy of attention.* We know, that, in persons liable to asthma, the paroxysm may be induced by indigestion; and there certainly are cases of cough, which, after resisting the usual remedies, yield to treatment directed to the stomach and bowels. A case of this kind, which had attracted much attention, has been communicated to me by a professional friend. It occurred in a gentleman between 50 and 60 years of age, and was a peculiar, loud, noisy cough, which had considerably reduced his strength, and for a long time resisted every remedy. It disappeared at last under a course of laxatives. The same kind of cough is uniformly induced in this gentleman by any inattention to diet by which his stomach is disordered, and yields only to the same treatment. A man, men-

* See the valuable work of Mr. Abernethy on the Constitutional Origin of local Diseases; and Dr. Wilson Philip on the Dyspeptic Phthisis, in Med. Chi. Trans. Vol. VII. p. 499.

tioned by Langelot, was affected with incessant dry cough, and, at length, wasting and death. The case was considered as decidedly phthisical, but the lungs were found perfectly healthy. The only morbid appearance was in the stomach, which appeared to have been affected with chronic inflammation.*

In young women, especially of the higher ranks, a state is met with which is very apt to excite the alarm of a tendency to consumption. The patient is found pale, sallow, listless, and inactive with bad appetite, disturbed sleep, and a small, frequent pulse. There is frequently nausea, especially after eating, and a feeling of oppression or exhaustion across the epigastrium; sometimes a more fixed uneasiness in one side, about the margin of the ribs, increased by cough and by full inspiration. There is a short dry cough, and the breathing becomes quick and uneasy upon any exertion, as going up a stair or an ascent. There is a feeling of coldness sometimes alternating with the flushes of heat. The bowels are generally costive, sometimes obstinate; the menses often retained, suppressed, or very scanty; but the affection, I believe, is not necessarily connected with the state of menstruation. It is treated successfully by country air, gentle exercise, and a combination of tonics with gentle laxatives. I have found nothing more useful than sulphate of iron, combined with aloes, taken three times a-day, in doses of two grains of the former with as much aloes as shall keep the bowels fully open, without purging. The other preparations of iron, and the vegetable bitters, may be used in the same manner. The abdomen is sometimes enlarged, and the affection seems to be connected in a great measure with derangement of the muscular action of the intestinal canal, especially the colon. It is not to be removed by strong purgatives, but by the combination of gentle laxatives with tonics. Friction of the body is also useful with warm clothing, tepid bath, or sponging with vinegar and water, at first tepid, afterwards cold.

There is also met with, especially in young females, a fixed pain in the side, about the margin of the ribs, often increased by inspiration, sometimes accompanied by cough, and occasionally by considerable oppression in breathing, occurring in paroxysms, not unfrequently with hysterical symptoms. It is in many cases extremely obstinate, and is apt to be referred to the liver, the spleen, or sometimes to the lungs. I have seen reason to believe that the seat of it is often in the arch of the colon; and, after having resisted a variety of active treatment, I have found

* Miscell. Curiosa. An. 1675. Obs. 14.

it yield to the combination of tonics and gentle laxatives, as sulphate of iron and aloes, with extract of hyoscyamus.

Sect. II.—*Cough from Irritation of the Diaphragm, by Diseases of the Liver, Spleen, &c.*

Cough and uneasiness in breathing, are frequent attendants on diseases of the liver, both acute and chronic. It is when the diseases in the liver is not the prominent symptom, that the case comes to be of importance in connexion with this inquiry. The cough, in such cases, is at first dry, but whenever there is a frequent irritating cough, from whatever cause, there comes to be an increased secretion from the bronchial membrane, produced by the irritation. Hence, there may be considerable expectoration, and even sometimes bloody.

Case I.—A lady, aged 35, had severe cough, with considerable expectoration; dyspnœa, which was sometimes severe, especially in the night; pain of the chest and side; frequent pulse; restless nights, with feverish paroxysms and morning sweats. The expectoration was viscid, frequently with a mixture of puriform matter, and occasionally of blood. In addition to these symptoms, she was liable to periodical fits of vomiting, which attacked her generally in the evening, and pain, which was referred to the left side of the abdomen, about the region of the spleen; but no disease could be detected, either there or in the liver. These complaints went on for upwards of two years, without materially reducing her, or impairing her strength. But, in the third year, her strength began to fail. She had then diarrhœa, anasarca, and gradual emaciation, and died exhausted about three years from the commencement of the complaint. Towards the end of her life, the vomiting became less frequent, but the severe rending cough continued, with copious expectoration, and severe fits of dyspnœa. On dissection, no morbid appearance could be detected in the lungs, or in any part of the thorax. The spleen was enlarged and hard. On the upper surface of the liver there was a considerable tumefaction, the surface of which was studded with small, hard tubercles: it protruded against the diaphragm, and pressed it upwards. But though the diameter of the liver was thus considerably increased at this part, it did not appear to project downwards from its natural situation. The other viscera were healthy.

This case is the most remarkable example of the kind that has occurred to me, and it shows strongly how much the symptoms may assume the appearance of an affection of the lungs. The only peculiarities were the fits of vomiting, the cough being louder and more noisy than the ordinary cough of consumption, and the length of time during which the symptoms continued without impairing her strength. Many cases of a similar kind are on record. In a case by Portal, similar symptoms were con-

nected with scirrhus of the pancreas, and disease in the mesenteric glands, without any morbid appearance in the thorax. The symptoms were, frequent cough, slight fever, gradual wasting, and at length death without any other prominent symptom. In a case by Bonetus, similar symptoms were connected with disease of the spleen; and, in another, by the same writer, the only morbid appearance was in the right kidney, the lungs being perfectly healthy—there had been cough for two years, and gradual wasting. In a case by Morgagni, there was a tumour, which weighed lb. i. attached to the posterior part of the stomach. The symptoms were, dry cough, difficult breathing, loss of appetite, and watchfulness. A young woman, mentioned by Laennec, had cough, dyspnœa, copious expectoration, hectic fever, and great wasting. After the symptoms had gone on for some time, and she was considered as decidedly phthisical, she was seized with violent pain in the epigastrium, and soon after discharged, by stool, an immense quantity of hydatids. From that day she recovered, and was soon well.*

In the cases now referred to, the pectoral symptoms seem to have arisen from mechanical irritation of the diaphragm. But there is another way, in which an affection, resembling consumption, arises from disease of the liver. The upper surface of the liver is attacked by inflammation, which terminates in an abscess, the inflammation extends through the diaphragm to the pleura, and an adhesion takes place betwixt the diaphragm and the lower part of the right lung. The matter from the abscess making its way upwards, passes, by means of this adhesion, into the bronchiæ, and is spit up. Cough, with purulent expectoration, then continues, and may either wear out the patient with all the usual symptoms of consumption, or the abscess may gradually heal, the expectoration at the same time gradually diminish, and the patient recover. If a case of this kind be seen from the commencement, it is in general easy to distinguish the nature of it, but, at an advanced period, it has very much the appearance of consumption. This affection is illustrated by the two following cases;

Case II.—A lady, aged 40, had been affected for some months with uneasiness in the region of the liver, when, on the 5th of October, 1815, she was seized with violent pain there, and vomiting. By the usual remedies, she was much relieved, but some degree of uneasiness continued for several weeks. It then seemed to subside, but, after a short interval, returned with violence, accompanied by vomiting, and fits resembling syncope. The whole region of the liver was tense and tender to the touch, with evident enlargement. The pulse varied, being

* Laennec L'auscultation Mediate, Tom. I. p. 278.

sometimes frequent and small, and sometimes quite natural. A variety of practice was now employed with little relief—the pain was at times so violent, that for many nights together, she was unable to lie down in bed. These paroxysms alternated with intervals of ease, but by the repetition of them for nearly three months, her strength was very much reduced. In the end of December, she began to have cough, with some expectoration, which had a purulent appearance. On the 14th of January she was seized with a violent fit of coughing, and expectorated purulent matter to the amount of at least lb. ij. On the 15th, she expectorated, in the course of the day, at least lb. i. and about the same quantity, on each of the two following days. The quantity then diminished considerably until the 25th, when she again brought up about lb. i. and the same quantity a few days after. The enlargement in the region of the liver then subsided, and from that time there was no great discharge, but she continued to have cough, with purulent expectoration, as in a case of consumption, with great weakness and emaciation. These symptoms continued for several weeks; the expectoration then began to diminish, and gradually ceased. She recovered her strength, and, by the end of May, was free from complaint. She has enjoyed good health ever since.

CASE III.—A soldier had an attack, which was considered as peripneumony, and was accompanied by pain in the lower part of the right side. It terminated in purulent expectoration, with wasting, and colliquative diarrhœa, and he died in three months. On dissection, there was an abscess, three inches in diameter, in the upper part of the liver, a strong adhesion of the right lung to the diaphragm, and a sinus, six inches long, passing through the substance of the lung, and communicating with the abscess of the liver. The lungs were, in other respects, sound.*

In cases such as these, it has been supposed that a diagnosis might be founded on a mixture of bile with the matter expectorated. I observed no such mixture in the former of these cases, and I see no reason for expecting it in all cases, for if the abscess be lined by coagulable lymph, as is likely to be the case, it is cut off from any connection with the biliary ducts.

In regard to the treatment, little need be said. In the early stages, it must be directed to the inflammatory disease in the liver—in the advanced stages, it must consist in supporting the strength, and favouring the healing of the abscess, by tonics and nourishing diet.

This affection is met with in a less active form, not advancing to suppuration, but continuing for some time, in what is called a sub-acute state, producing symptomatic cough, and other pectoral symptoms, and distinguished by tenderness in the region of the liver. If taken in time, it yields to treatment directed to the liver, especially topical bleeding and blistering, in the early stages

* Edinburgh Medical Essays, Vol. I. p. 217.

and afterwards a little mercury, with opium. I have observed it chiefly in elderly people, but it is not a common disease in this country. In these and the other cases of symptomatic cough, as it may be called, the cough is generally louder, and more noisy than in a pulmonic affection, the lungs being more freely inflated than they are likely to be when the cough is connected with disease in the thorax.

Sect. III.—*Chronic Inflammation, and Ulceration of the Larynx, or the upper part of the Trachæa.*

This affection forms the laryngæal phthisis, to which more attention has been paid on the Continent than in this country. It is a disease of not unfrequent occurrence, and of extreme danger, and it presents a most important subject for investigation. The symptoms, vary considerably in different cases, according to the seat and extent of the disease, but many of the cases are with great difficulty distinguished from the ordinary consumption of the lungs. There is frequent cough, with purulent expectoration, frequently mixed with blood, gradual emaciation, hectic fever, at last diarrhœa, and death, with the usual appearance of phthisis. But, on dissection, the lungs are found perfectly healthy, the morbid appearances are confined to the inner surface of the larynx, or the trunk of the trachæa, and usually consist of one or more well defined ulcers, sometimes with caries of the cartilages, and sometimes with irregular fungous elevations of the mucous membrane.

The symptoms by which this disease is distinguished from pulmonary consumption are not uniform, and are often obscure. There is generally a feeling of irritation about the larynx, and sometimes acute pain referred to a particular spot on the larynx or the upper part of the trachæa; in some cases the larynx is painful on pressure; the voice is generally more or less affected with hoarseness, or a peculiar huskiness; in many cases it is much impaired, so that the patient can only speak in a whisper, and sometimes it is entirely lost. The cough is severe; in some cases occurs in paroxysms, almost resembling the paroxysms of hooping-cough, and sometimes it excites vomiting. The proper expectoration is purulent and in small quantity, sometimes mixed with small membranous portions, and often bloody; but it is always to be kept in mind, that when the lungs are much irritated by cough, kept up by any cause external to them, an increased secretion from the bronchial membrane is apt to be produced by the constant irritation, or even the real chronic inflammation of the membrane. Hence the expectoration sometimes consists of considera-

ble quantities of viscid mucus from the bronchiæ, streaked with pus from the real seat of the disease. In many cases the breathing is considerably affected, and this may either be a permanent difficulty with wheezing, or it may occur in paroxysms. These attacks are sometimes accompanied by palpitation, and other symptoms so severe, that the affection has been mistaken for disease of the heart. These symptoms seem to occur chiefly when ulceration is seated in the lower part of the trunk of the trachæa, about the bifurcation; especially if it be accompanied (as it frequently is) by fungous elevation of some of the parts connected with the ulcer. In some cases there is difficulty of swallowing, the attempt exciting pain and paroxysms of cough.

The principal morbid appearances are chronic inflammation and ulceration of the inner surface of the larynx, or the trunk of the trachæa; sometimes with caries of the cartilages, and sometimes with thickening of the membrane and fungous elevations, which considerably narrow the canal. In some cases small abscesses are found. These, however, generally burst before death. In one case which will be referred to, such an abscess burst externally, but without arresting the disorder. The disease may come on gradually in the form of chronic inflammation, or it may supervene upon an acute attack, ulceration being left as the result of it. In some cases tubercles have been found on the mucous membrane of the trachæa, and the affection has arisen from these passing into ulceration. The disease may be fatal by gradual emaciation, like a common case of consumption; or rapidly by the accession of inflammatory symptoms; or suddenly by suffocation. The prognosis is in all cases extremely unfavourable. Except the disease can be arrested in its first or inflammatory stage, it will probably be fatal. It is therefore of the utmost importance that the first appearance of it be watched with the greatest care, and treated with the greatest decision. The remedies are obvious, though they may be varied a little according to the circumstances of the case. General bleeding may often be required; topical bleeding must be used extensively and repeatedly. The other remedies are blistering, issues, antimonials, very spare diet, and perfect rest, purgatives, and perhaps emetics; calomel may be useful in some cases after the first activity is subdued. When the disease has got into the state of ulceration, I cannot say what is the best treatment, or whether any treatment can arrest the progress of it. Those from which we might expect benefit, are issues, emetics, opiates, antimonials, warm air, perhaps balsamic fumigations, and preparations of iron, and perhaps in some cases small quantities of mercury with opium. The French believe that the disease has in some cases a syphilitic origin.

Morgagni seems to have been the first who attended to the peculiar nature of this affection. At an early period of his life, a case occurred to him, which had been considered and treated as pulmonary consumption, by the most eminent physicians. The symptoms were cough, with purulent and bloody expectoration, and a fixed pain a little below the larynx, without fever. Morgagni considered it as a disease of the trachæa, and it got well by confinement, rest, regulated temperature and spare diet. I suspect that the disease in a slighter form is more common than is supposed. I have repeatedly met with cases of obstinate cough which had resisted the usual remedies, and at last yielded to topical bleeding on the larynx. I have formerly described a case of this kind, which occurred in a gentleman about fifty, and was remarkable from the extreme violence of the paroxysms of coughing. They resembled the most violent hooping cough, and sometimes continued for more than an hour without intermission, until they threatened suffocation or apoplexy. After resisting the most active treatment, the case yielded readily to two applications of leeches to the larynx.* The great importance of this subject will be a sufficient apology for adding some cases illustrating the various modifications of the disease.

Case IV.—A man, aged 33, after sitting in a current of air when much heated, was seized with cough and pain extending from the throat to the breast. After a short time, his voice was much impaired: the cough was violent; the expectoration at first mucous, afterwards purulent; he then had hectic paroxysms, and night-sweats; dull uneasiness of the breast, and rapid emaciation; there was a constant tickling irritation of the throat, and deglutition was painful. His voice at last was entirely lost, and he died completely emaciated in less than three months from the commencement of the disease. *Dissection.*—An ulcer of the superior and middle part of the larynx, occupying half its circumference at the upper part, and extending to the epiglottis; left arytenoid cartilage ossified and carious; surface of the cricoid cartilage covered by red elevations; the membrane covering the right arytenoid was thickened and ulcerated; mucous membrane of the trachæa vascular and thickened; lungs adherent, and some small gray tubercles in them; otherwise healthy.†

Case V.—A young man, aged 16, after exposure to cold when heated, had head-ach, pain of the throat, cough, fever, and epistaxis. After a fortnight, he had severe diarrhœa, and tight breathing: cough continued, with thick expectoration, and febrile paroxysms; then great debility, involuntary stools, tenderness of the abdomen, harassing cough, and he died in about a month. *Dissection.*—Pharynx and ad-

* Edinburgh Medical Journal, Vol. XV.

† Prost. Med. Eclairée par l'observation et l'ouverture des Corps.

joining parts red; the larynx red, and an ulcer at the base of the epiglottis; the lining membrane and chordæ vocales thickened; behind the arytenoid cartilages, a small opening led into a sac, which had contained pus; lungs healthy; bronchial membrane dark-coloured; inflammation, and some appearances of ulceration of the mucous membrane of the intestines.*

Case VI.—A man, aged 39, after pneumonic symptoms, had a tickling sensation in the throat, with constant desire to cough; alteration of voice, and hoarseness; copious expectoration of frothy mucus, with purulent particles interspersed in it; frequent pulse; lassitude; sleep nearly prevented by incessant cough; emaciation. Died in four months. *Dissection.*—Superior aperture of the larynx was diminished by thickening of the membrane; one arytenoid cartilage, and part of the other destroyed by ulceration; trachæa healthy.†

Case VII.—A girl, aged 19, had cough, difficult breathing, with a peculiar noise, somewhat resembling croup; pulse natural; no debility or constitutional disturbance; ill three months. Died unexpectedly in the night. *Dissection.*—Rima glottidis contracted; posterior part of the inner surface of the larynx occupied by an ulcer; a second ulcer on the posterior part of the trachæ, a little below the larynx; and a third a little lower, which nearly embraced the circumference of the trachæa, and was about one-third of an inch broad; bronchiæ and lungs healthy.‡

Case VIII.—A man, aged 34, had cough, with mucous expectoration; pain of the larynx; hoarseness. After some weeks, the cough increased, and the expectoration become purulent; fever, and some dyspnœa. Died gradually exhausted in two months. *Dissection.*—Ulceration of the mucus membrane of the larynx; arytenoid cartilages carious, and covered with pus; lungs and trachæa quite healthy.§—In another man, with similar symptoms, a tumour formed on the fore part of the neck, which suppurated and discharged matter, and left a fistulous opening, which communicated with the larynx. The symptoms were relieved for a short time; but they soon returned; his voice was entirely lost; and he died gradually exhausted. His body was not examined.

Case IX.—A man, aged 49, after the sudden disappearance of glandular swellings of his neck and arm-pits, with which he had been affected for seven or eight months, had cough with tight breathing, and at times a sense of suffocation; frequent pulse; weakness and wasting; after some time he had purulent and fetid expectoration, which was sometimes mixed with frothy and pituitous matter; fits of coughing after meals, which excited vomiting; increasing weakness; afterwards he had habitual dyspnœa, and fits of palpitation; voice hoarse; at length orthopnœa; died in six months. The case had been considered as disease of the heart. *Dissection.*—In the inferior part of the trunk of

* Prost. Med. Eclairée par l'observation et l'ouverture des Corps.
† Beddingfield's Compendium of the Practice of Physic.
‡ Beddingfield, ut supra.
§ Journal de Med. Tom. IX. An. xiii. New Series, p. 185.

the trachæa near the bifurcation, there was an ulcer occupying about half its circumference, and about an inch and a half in length; the cartilages denuded and eroded; the ulcer was covered with yellow pus; mucous membrane around it inflamed; some puriform mucus in the bronchiæ: all the other parts healthy, except a very small portion of the lower part of the right lung, which was sligtly hepatised, but not to such a degree as to sink in water.*

Case X.—A man, aged 69, had dry cough, attacking him in paroxysms, which he neglected for six months; then occasional fits of dyspnœa and suffocation, which usually continued some hours. At first they occurred seldom, but in the ninth month were more frequent At this time expectoration began, which was glairy and ropy; voice impaired and afterwards lost. In the fourteenth month he began to waste, and had pain in the chest, behind the upper part of the sternum; hectic fever; diarrhœa; fits of dyspnœa continued; expectoration copious but without pus. Died in the last degree of wasting after sixteen months: the fits of dyspnœa having become less frequent and less severe for some time before death. *Dissection.*—Larynx sound; two inches below it, the membrane of the trachæa became red, and the redness became more intense the lower down, until it led to a large and deep ulcer, extending half an inch into the bifurcation on both sides. Its surface was unequal, and covered with various tubercles, white, red, and brown: bronchiæ below healthy; lungs quite sound, except a slight adhesion on the right side.†

Case XI.—A woman, aged 50, liable to dyspnœa and hæmoptysis, had constant dyspnœa and wheezing, with exacerbations, which threatened instant suffocation: feeling of heat and tightness behind the sternum: cough occurring in violent paroxysms, with viscid expectoration: voice hoarse: occasional faintings: pulse natural. After some time dyspnœa increased: face livid: was obliged to sit up in bed with her body leaning forward: violent pulsation of the heart on the least motion: expectoration streaked with pus died suddenly after fourteen months. *Dissection.*—An ulcer two inches long, occupying the whole circumference of the trachæa immediately above the bifurcation cartilages in some places exposed and eroded; but in other places the canal was narrowed by the thickening of the parts: bronchiæ loaded with puriform fluid, and the membrane red: lungs sound, except some small portions which were slightly hepatized: heart sound.‡

Case XII.—A woman, aged 40, after the healing of an ulceration of the pharynx, had cough with a feeling of tickling in the glottis: purulent expectoration streaked with florid blood: pulse frequent; voice altered; continued five or six months with little change, and was then cut off by a rapid inflammatory attack after exposure to cold. *Dissection.*—A circular ulcer in the upper part of the trachæa, about one-sixth of an inch in diameter; lungs sound; bronchiæ vascular and filled with puriform fluid.§

* Cayol, Recherches sur la Phthisie Trachéale.
† Ibid.
‡ Ibid.
Hastings on Diseases of the Bronchiæ, p. 246.

Case XIII.—A man, aged 47, had violent cough; hoarseness; some dyspnœa; fever; wasting; died in three months. *Dissection.*—A small ulcer found near the larynx; lungs healthy.*

As this affection has been little attended to in this country, I have thought it of importance to refer to these examples, calculated to illustrate its various modifications, and to establish the pathology of it as a fatal disease, quite distinct from any disease of the lungs. It also occurs in combination with the ordinary tubercular phthisis; and this seems to be so frequent, that from the examination of a number of cases in the French hospitals, M. Bayle supposes the larynx to be affected in one case out of six. The ulceration of the larynx seems in some of these cases to be the primary disease, and in others a secondary affection, occurring as part of that general tendency to ulceration of the mucous membranes which exists in the advanced stages of consumption. When it is the primary disease in a person in whom tubercles exist in the lungs, it is not unlikely that the constant irritation kept up by the laryngæal disease may excite the tubercles into activity, and thus prove the immediate cause of phthisis. A man, aged 30, had cough with pain referred to the larynx, and mucous expectoration, mixed with small pieces of pus; his voice was hoarse and sibilous; deglutition very difficult, the attempt exciting vomiting; hectic fever; died in five months. *Dissection.*—An ulcer nearly an inch in extent, made a free communication betwixt the larynx and the pharynx Posterior part of the cricoid cartilage was so carious, that it projected into the pharynx at both sides. The lungs were tubercular, and abscesses had begun to be formed at the upper part of them.† A woman who had been long affected with cough and pain of the larynx, was afterwards seized with pain of the breast, dyspnœa, loss of voice, and died gradually exhausted. An ulcer was found in the larynx, and induration with abscess of the left lung.‡

On the other hand, when the laryngæal or trachæal ulceration appears as the secondary affection, it seems to occur merely as a part of that general tendency to unhealthy ulceration, which exists in many of these cases, particularly ulceration of mucous membranes. This occurs most remarkably in the mucous membranes of the intestinal canal, but may also be observed in the larynx, the trachæa, the bronchiæ, the œsophagus, and even in the urinary bladder. The ulcers in such cases are small but nu-

* Badham on Bronchitis, p. 162.
† Frank, Act. Institut. Clinic. Vilnensis, An. II. p. 63.
‡ Bayle Recherches sur la Phthisie Pulmonaire.

merous, less extensive, less deep, and more numerous than in the cases of primary ulceration of these parts.

Case XIV.—A gentleman, aged 45, after suffering much from scrofulous tumours on the neck, which suppurated slowly, had cough with frequent pulse; night sweats; emaciation and weakness; expectoration scanty, and consisting of whitish phlegm with a small mixture of puriform matter; his voice was weak and hoarse; and the cough had a peculiar husky sound; breathing sometimes a little frequent, but complained of no pain, and took a full breath without uneasiness; died gradually exhausted after five or six months. *Dissection.*—Left lung sound: right extensively indurated, and full of small abscesses: mucous membrane of the larynx thickened, with some ulceration: mucous membrane of the trachæa covered through its whole extent by a succession of minute ulcers, not above the twentieth of an inch in diameter.

The only other modification of this affection which deserves to be mentioned is, when tubercular disease exists both in the lungs and the trachæa at once, and in both is brought into activity about the same time. A girl, aged eight, liable to cough and glandular swellings, was seized with dry cough, difficult breathing, and slight fever, which appeared in the evening. After five days, great oppression, more fever, great dyspnœa, and difficult deglutition; copious perspirations; pain referred to the neck. About the eleventh day, cough increased; occurred in frightful paroxysms, with puriform expectoration streaked with blood, and membranous concretions; died on the twenty-fifth day. *Dissection.*—The lungs were full of steatomatous concretions, many of which had begun to suppurate; there were similar concretions in the trachæa and the larynx, which were ulcerated, and furnished much pus.* In another case, in which an affection of the lungs terminated in nearly the same manner, tubercles and ulcers were found in the trachæa and the larynx, and an abscess, containing ʒi. of matter betwixt the larynx and the pharynx; the lungs extensively tubercular and suppurated. The power of swallowing was lost in this case.†

Sect. IV.—*Chronic Inflammation of the Mucous Membrane of the Bronchiæ.*

The acute inflammation of the mucous membrane of the bronchiæ was long confounded with pneumonia. It is now perfectly distinguished from it in a pathological point of view, though

* Portal sur la Phthisie Pulmonaire, Tom. I. p. 18.
† Ib. p. 101.

fatal by progressive emaciation, as in consumption, and exhibits on dissection the morbid appearances already referred to, without any disease of the substance of the lungs.

Case XV.—A man, aged 33, after severe catarrhal symptoms with an exanthematous eruption, had cough, copious expectoration of an opaque fluid entirely resembling pus; short quick breathing; small frequent pulse; night sweats and diarrhœa. He died suddenly after indulging in wine, about a month after the attack. *Dissection.*—The lungs were quite sound without either tubercle or induration. The mucous membrane of the bronchiæ was red and thickened, and the bronchial tubes contained much puriform fluid, similar to that which had been expectorated.*

Case XVI.—A man, aged 25, had pain of chest, with a sense of load or weight in it; difficult breathing; a hoarse cough with expectoration; frequent pulse; and strong action of the heart. After repeated attacks for two years, the disease became permanent, with copious expectoration, occasionally streaked with blood; profuse perspiration; gradual emaciation and death. *Dissection.*—Heart and lungs quite healthy; mucous membrane of the trachæa and bronchiæ inflamed; the former slightly; the latter more considerably; the branches contained a great quantity of frothy fluid.†

Case XVII.—A girl, aged 15, after a febrile attack with cough and dyspnœa, had severe cough, with copious expectoration, composed of pus and mucus, and sometimes bloody; debility; increasing emaciation; perspirations; expectoration becoming more purulent; death in two months. *Dissection.*—Lungs healthy, except a little harder and heavier than natural. Trachæa and bronchiæ full of puriform fluid. Bronchial membrane thickened and highly vascular, and small ulcers were found in various parts of it.‡

Dr. Willan frequently met with the disease in London, supervening upon catarrhal fever. There was cough, with thick viscid expectoration, often bloody, and in some cases a mixture of fetid, greenish matter, hectic fever, sweats, and diarrhœa. They all seem to have recovered by topical bleeding, blistering, and antimonials.§

There is another modification of the disease, which occurs in persons rather advanced in life. There is cough, with copious expectoration, varying in its characters, sometimes distinctly purulent; but the prominent symptom is difficulty of breathing. In some cases it is permanent dyspnœa, with suffocating cough; in

* Bayle. Recherches sur la Phthisie Pulmonaire. Obs. 48.

† Roberts. Trans. of College of Physicians. Vol. IV. p. 131.

‡ Hastings on Inflammation of the Mucous Membrane of the Lungs. p. 315.

§ Willan on the Diseases of London.

others it occurs in paroxysms, like asthma, but the paroxysms are generally shorter than in the true asthma. They are apt to occur in the morning, with long fits of coughing, and are relieved by expectoration, the bronchiæ being sometimes cleared of immense quantities of it. They have also a connection with the state of the stomach, and are apt to occur an hour or two after dinner. The disease may go on for years without materially injuring the general health; but it renders the patient extremely susceptible of cold, by which inflammatory symptoms are apt to be induced; and it is usually by one of these attacks that it is fatal. It presents nearly the same morbid appearances which have been already referred to, but generally with more induration of the substance of the lungs; and in some cases, especially those which have terminated by an inflammatory attack, cavities are observed like very small abscesses; but it is doubtful whether they are really abscesses, or whether they are merely the bronchial cells, full of purulent matter.

Chronic disease of the bronchial membrane may go on to a fatal termination, as an idiopathic disease, or it may exist in combination with other morbid conditions of the lungs. The most important of these are two. (1.) The ordinary tubercular consumption. In this combination the bronchial disease may either be the primary or secondary affection. In the former case, it is probable, that, tubercular disease having previously existed, the bronchial affection may prove the immediate cause of exciting it to action; in the latter, it appears as a part of the general tendency to ulceration of mucous membranes which occurs in cases of tubercular phthisis. This combination will modify the characters of the expectoration, the proper expectoration of the tubercular disease being mixed with that of the bronchial affection. Another modification arises from combination with tubercular disease which had not suppurated. A man, aged 30, had first catarrhal symptoms, then hæmoptysis, and afterwards cough, with fever and weakness; the expectoration mucous, and in part purulent. He had afterwards night-sweats, rapid emaciation, diarrhœa; the expectoration became purulent and copious; and he died with all the appearances of consumption. Both lungs were most extensively affected with tubercular induration, a very small part only being sound, but without any appearance of suppuration.* (2.) Chronic disease of the substance of the lungs, of the nature of chronic peripneumony; or the effect of it, simple induration, not tubercular, or hepatisation of the pulmonary substance. In every case of peripneumonia, the expectoration must be derived

* Bayle, Recherches sur la Phthisie Pulm. Obs. 26.

from the bronchial membrane, except when it advances to suppuration; so that this disease is probably accompanied in all cases by more or less of the bronchial affection. The disease, beginning in this way, may pass into a chronic form, in which the chronic disease of the membrane with its usual symptoms, is combined with induration of the lung. The expectoration, in these cases, being often puriform, and very abundant, may give the appearance of abscess of the lung.

Case XVIII.—A man, aged 25, after acute peripneumonia, continued to have cough, with copious expectoration, which was mucosopurulent; rapid wasting, and death in two months. *Dissection.*—Both lungs were indurated like liver in three fourths of their substance; but without any appearance either of suppuration or tubercles. The appearance of the bronchial membrane is not mentioned, but the expectoration must have been derived from it.*

In another case, the disease was found at an earlier period. A man, aged 36, had difficult breathing the lungs being dilated with a great effort and a rattling sound; he had cough with mucous expectoration, and died in a month. The lungs were extensively hepatised, but without tubercles. The bronchial membrane below the bifurcation was red and thickened, and covered in many places by a deposition, resembling the membrane of of croup. Had tubercles existed in either of these cases, they would probably have been excited into action, and would have been found in a state of suppuration. In some of these cases, however, an appearance presents itself which is apt to be mistaken for suppurated tubercles. In cutting through the hepatised portion of lung, drops of purulent matter start up at numerous points, giving the appearance of numerous small abscesses; they seem to be merely drops of the puriform secretion, discharged from the bronchial canals when they are cut across.

There is still another modification of chronic disease of the bronchial membrane, which, though of rare occurrence, deserves to be noticed. The exudation from the diseased membrane assumes a firm and membranous appearance, and is spit up in the form of polypous concretions or cylindrical tubes of considerable extent, exhibiting the ramifications of the bronchiæ. This appearance was observed by some old writers, and was then considered as an actual discharge of the vessels of the lungs from extensive destruction of their substance. A young man, mentioned by Tulpius, expectorated a tubular portion of this kind, the length of a finger, and branching like an artery. He recovered at that

* Broussais. Histoire des Phlegmasies Chroniques. Tom. I. p. 68.

time, but died of pectoral complaints a year after. Another patient, mentioned by the same writer, brought up, with much blood; a similar mass, branching out like the hand.* A gentleman, mentioned by Dr. Nichols, after an inflammatory attack, coughed up large portions, hollow, very tough, and branching like blood-vessels. He continued to discharge them frequently for seven years, and was otherwise in good health.† A boy, aged five years, mentioned by M. Bussiere, had cough, with occasional hæmoptysis, for a year; and, about a fortnight before his death, began to spit up firm membranous substances, shaped liked vessels. On dissection, the trachæa and bronchiæ, through their whole extent, even into the smallest branches, were lined by a membranous deposition, which adhered to the inner surface of these parts by very fine filaments, and was easily separated. The lungs in other respects were sound.‡ A gentleman, mentioned by Dr. Cheyne, had cough, dyspnœa, hoarseness, and puriform expectoration, and occasionally brought up firm membranous portions, of a semi-cylindrical shape, which appeared to have been thrown off from a part of the trachæa, above the bifurcation. They were of a much greater density than the membrane of croup, and of a finer white; consisted of a succession of layers, and were about a line in thickness. The case was in an active form at first, and was treated by repeated bleeding; and he recovered, having continued for some time to expectorate smaller portions of the same membranous substance.§ A woman, mentioned by the German translator of Portal on Phthisis, expectorated large quantities of the same matter, very firm, in some places almost cartilaginous, and having exactly the appearance of the bronchial ramifications: they were so large, that it seemed inconceivable how they had passed through the glottis. She recovered perfectly in a few weeks.

Bronchial inflammation, in its active state, requires the most decided antiphlogistic treatment in its early stages; but the period for active practice is soon over; and if the efficient treatment has been neglected at the proper period, there is great danger, either that the disease will be fatal, or that it will pass into a chronic state, in which it is likely to prove extremely tedious and untractable.

In the early stages of the chronic disease, or what may be termed the subacute state of it, benefit is derived from topical bleed-

* Tulpii, Observationes Medicæ, Lib. II. cap. xiii.
† Philosophical Transactions, 1731, No. 419.
‡ Ibid. No. 263.
§ Edin. Med. Journal, Vol. IV. p. 441.

ing, blistering, issues, rest, cool spare diet, regulated temperature, mild emetics, antimonials combined with opiates, Dover's powder, and digitalis. Some rely much on calomel combined with opium. Dr. Hastings recommends extract of cicuta, with small doses of ipecacuan. When the disease is decidedly in a chronic state, with general debility and wasting, it is to be treated entirely upon the tonic plan, by nourishing diet, a cautious allowance of wine, gentle regular exercise, change of air, friction of the body, sponging with vinegar and water, cold or tepid, and remedies of a tonic or stimulating kind, combined with mild opiates, as the cough may require. Of the remedies employed with this view, a great variety have been recommended; they act nearly on the same principle. The most useful are the following: bark in decoction, or in substance; strong decoctions of the vegetable bitters, with a proper proportion of laudanum, or tincture of hyoscyamus, in each glass; preparations of iron, with opiates; balsam of copaiva; myrrh; colchicum; gum ammoniac; seneka; casearilla; lime-water; horehound. Kerckhoffs recommends the Viscum album as of great efficacy, either in powder or decoction; and the powdered bark of the Salix alba, with a sixth part of sulphur, made into an electuary with syrup of poppies.* Keeping up a pustular eruption on the thorax, by an ointment containing tartrite of antimony, is said to be sometimes extremely beneficial. It is in this affection, I imagine, that the tar vapour is useful. The paroxysms of dyspnœa, which occur in the disease in elderly people, often do not yield to the antispasmodics which relieve asthma. I have found nothing so useful in some of these cases as a moderate dose of laudanum, with a small quantity of tartrite of antimony in solution, perhaps one-sixth or one-fourth of a grain, or such a quantity as can be taken without exciting vomiting.

A leading character of this disease is a remarkable susceptibility of cold; and when it proves obstinate, a most important measure is removal to a mild and equable climate. It is probably in these cases that this measure has been chiefly beneficial.

It is highly satisfactory to know, that, upon this general plan, many cases have been treated successfully, after they had assumed an alarming appearance, and had exhibited many of the characters of an advanced stage of consumption, severe cough with purulent and bloody expectoration, febrile paroxysms, perspirations, debility, and emaciation.* In this state it is certainly a disease of great danger, but it is never to be despaired of.

* Trans. of the College of Physicians, Vol. VI. p. 27.

* See Richter on Mucous Consumption, Hastings, Badham, Willan,

Sect. V.—*Chronic Inflammation of the Pleura.*

This affection is of great importance in this inquiry, as it assumes in a great degree the characters of phthisis, and I suspect is often mistaken for it. The symptoms are cough, with some degree of pain in the thorax, generally either under the sternum, or in one side; tightness and oppression of breathing. The pain is increased by coughing, and by bodily exertions, as walking, and sometimes considerably impedes respiration. The cough is at first short and dry, afterwards there is mucous expectoration, often bloody; and in the advanced stages, it is apt to assume a puriform appearance, and is sometimes decidedly purulent. The pulse is generally rather frequent, but is sometimes very little affected. In this state the symptoms may continue for a considerable time, without producing much constitutional disturbance; but as the disease advances there is debility, with emaciation, hectic paroxysms, night-sweats, diarrhœa, and death by gradual exhaustion, in many cases with great difficulty of breathing, and symptoms resembling hydrothorax.

The morbid action which is going on during this course of symptoms, originates in inflammation, confined to a circumscribed portion of the pleura, and in general not assuming much activity. There is reason to believe that it may continue in this state for some time, and then subside, leaving perhaps adhesion at the part, but no morbid affection of a serious kind. In other cases it is more fixed, and spreads over a greater extent of the pleura, in some cases nearly over the whole of one side It produces deposition of coagulable lymph, and effusion of a turbid fluid, with flocculi of yellow matter; and frequently the whole assumes a puriform appearance. This effusion may either be contained in the general cavity of the pleura, or in a small portion of the cavity, forming

Bayle, Portal, and some very interesting cases by Dr. Chapman in the Medical Communications, Vol. I. which had all the symptoms of advanced phthisis, and recovered under the use of cinchona in doses of ʒi. three times a-day. Is the remarkable case described by Mr. Abernethy referable to this head? I am inclined to think it is. The patient had severe cough, with extreme emaciation, and a pulse at 140. She spit up in each 24 hours more than a pint of mucus, mixed with pus, and streaked with blood, and had constant diarrhœa, with black and offensive discharges. She took twice a-day a grain of opium, with gr. ss. of calomel, and recovered perfectly. The calomel affected her mouth after she had taken twelve pills. From that time the stools became of a natural colour and consistence; the other symptoms subsided, and soon ceased.

a cyst lined by coagulable lymph, the remainder of the cavity being obliterated by adhesion. In a case by Dr. Armstrong, an abscess had been formed immediately under the pleura pulmonalis, betwixt it and the substance of the lung. The quantity of fluid has sometimes been found to amount to seven or eight pounds. The lung in such cases is compressed, and has a firmer appearance than natural, in consequence of the compression; but it may be entirely free from disease, except a coating of coagulable lymph on its surface. Its appearance has been frequently compared to the lung of the fœtus. It has been in some cases so compressed, and so concealed by coagulable lymph and yellow flocculent matter, that it has appeared at first sight to be wanting; and it is probably in cases of this kind that a whole lung has been supposed to be destroyed. In other cases, the inflammatory action spreads into the substance of the lung, producing induration, and the other usual consequences. The affection may also be complicated with tubercular disease, in which case the tubercles will probably be found in a state of suppuration. But the disease may exist without any such combination, and may go through its course to a fatal termination, without any disease of the substance of the lungs.

The expectoration in this disease must generally be from the bronchial membrane, as in all cases in which there is frequent irritation of the lungs, without disease of their substance. At first it is merely an increased secretion; but in the more advanced stages, it seems to amount to chronic inflammation of the membrane; hence the expectoration may assume a puriform character. But there is another source of puriform expectoration; for cases have occurred in which the puriform matter, formed in the cavity of the pleura, has found its way by a small fistulous opening through the substance of the lungs, into a branch of the bronchiæ, and has been spit up in large quantities; the substance of the lung being quite sound, except this small fistulous canal. Cases have also occurred in which the fluid has found its way outwards, by an opening betwixt two of the ribs.

The following cases will illustrate the leading phenomena connected with this most important affection. In the first of them I had an opportunity of observing it at an early period, its progress being arrested by another disease, of which the patient died.

Case XIX.—A young man, aged 19, of a family which had suffered from consumption, was affected, in October, 1819, with short dry cough; pain in the thorax towards the right side; sense of tightness in the chest; some constitutional disturbance, with restless nights; pulse little affected. The complaint had entirely the appearance of incipient

phthisis. The symptoms had continued with little change for six or seven weeks, when in the middle of December he was seized with a violent pain in the right temple, and fell down suddenly, deprived of sense and motion. He soon recovered his recollection, but was affected with hemiplegia of the left side, and his speech was very inarticulate. He then lay with very little change for several weeks; during which time he was entirely free from his pectoral symptoms. In the middle of January he began to improve a little in his paralytic complaints, and as this took place his cough began to return, with pain in the right side. For three or four weeks he continued to have cough, sometimes severe, but his speech was quite distinct, and the motion of the left leg was greatly improved; the arm continued completely paralytic. On the 15th of February, he was again suddenly attacked with loss of speech, preceded by pain in the back of the head; and he lost the power of swallowing, which he never recovered. His speech returned in a very short time. From this time, the pectoral symptoms again disappeared and never returned. He was fed by means of an elastic gum tube till the 20th of March, when he died gradually exhausted. *Dissection.*—On raising the dura mater, a remarkable depression appeared, on the right hemisphere of the brain, on the anterior part of the middle lobe. This was found to arise from an extensive portion, which was broken down into a soft pulpy mass without distinct suppuration and without fetor; it extended nearly the whole depth of the hemisphere. Adjoining to it, there was a small abscess, no larger than a bean, lined by coagulable lymph. There was a small quantity of fluid in the ventricles. On raising the brain a remarkable appearance was observed in the basilar artery. It appeared externally to be very much enlarged, but when cut into was found to be solid, its cavity being completely filled up for about an inch in length, by a firm white substance. Anteriorly to this portion there was a coagulum of blood in the artery. The other parts of the brain were sound. In the thorax there were extensive adhesions; and at the lower part of the right side, betwixt the lung and the ribs, and extending down upon the diaphragm, there was a considerable deposition of coagulable lymph, which was soft and transparent. The lower part of the right lung was rather firmer than usual; the substance of the lungs in other respects was quite healthy.

Case XX.—A man, aged 22, had been long in hospital affected with cough and slight mucous expectoration; a fixed dull pain in the left side of the thorax; and frequent pulse. He had afterwards diarrhœa, and died after a long illness in the last degree of emaciation. *Dissection.*—The left cavity of the pleura was full of a gray ropy fluid, the plura was thickened, red, and covered with a white friable exudation two lines in thickness. The lung was compressed, and its substance rather fleshy, but not otherwise diseased.*

Case XXI.—A young man had cough and pain of the right side, which was not severe but never gone; increased by exercise; febrile paroxysms. The cough was chiefly troublesome in the night; afterwards diarrhœa; wasting; anasarca; and death in three months, with extreme emaciation. *Dissection.*—Left lung quite sound; the right

* Broussais, Histeire des Phlegmasies Chroniques. Tom. I.

was attached to the ribs by recent adhesions, except at one place, where it was free from adhesion; and a circumscribed cavity was left betwixt the two pleuræ, which was lined by a thick coating of coagulable lymph, and contained about lb.iss. of purulent matter. The substance of the lung was a little firmer than natural, but crepitating.*

In the following case, the disease was complicated with tubercles:

Case XXII.—A man, aged 22, had severe cough, at first dry; afterwards with thick and white expectoration; general undefined uneasiness across the thorax. When he lay on the right side, his breathing was oppressed; when on the left, he was harassed with cough; so that he was generally obliged to sit up; frequent pulse; wasting; died in five months. *Dissection.*—Right lung much diminished in size, and full of tubercles with some abscesses; the cavity of the pleura full of a milky fluid, and the pleura covered with a thick exudation. Left lung hepatised, and with some tubercles not suppurated.†

Case XXIII.—A man, aged 30, after a pneumonic attack had cough, with white opaque expectoration; short oppressed breathing, and pain in the left side of the chest, which disappeared on the 28th day of the disease. The cough continued, and the expectoration became purulent and fetid, with night-sweats, emaciation, diarrhœa, and death in four months. *Dissection.*—Right lung adhering extensively, but healthy, except a small part of the inferior lobe, which was firm, with one or two tubercles. In the left cavity of the pleura lb.iss. of greenish fetid pus; pleura thickened and covered with a thick albuminous layer, with albuminous bands which crossed from one pleura to the other. Superior part of the left lung perfectly sound. The inferior lobe was compressed and flattened, but not otherwise diseased, except that two fistulous openings passed through it, and made a communication betwixt the bronchiæ and the collection of matter in the cavity of the pleura.‡

Case XXIV.—A man, aged 62, had pain in the chest and right side; oppressed breathing; frequent pulse and cough with expectoration, which was first mucous, then bloody, and then purulent; wasting; diarrhœa; and death in five or six weeks. *Dissection.*—Right lung adhering, except at one part on the right side, where there was formed by the two pleuræ a cavity lined with thick flocculent matter, and full of pus; pleura forming this cavity was in some places covered with an adventitious membrane a line and a half thick. Two thirds of the lung sound. The lower third was compressed and firmer than usual, and a fistulous opening three inches long passed through it, which admitted a female catheter, and made a communication betwixt the bronchiæ and the collection of matter in the cavity of the pleura.§

* Broussais, Histoire des Phlegmasies Chroniques. Tom. I.
† Ibid.
‡ Bayle. Obs. 43.
§ Bayle. Obs. 44.

In a case mentioned by the Italian translator of Portal, after symptoms similar to those in the above cases, a tumour formed externally on the right side of the thorax, which burst and discharged abundance of pus, and in a fit of coughing air sometimes passed through it. There was hectic fever and great wasting, but the man gradually recovered. In a case mentioned by Dr. Ayton Douglas, a tumour appeared in the same circumstances under the left scapula, which, during violent fits of coughing, was sometimes distended to the size of a quart bottle, and suddenly diminished again. The man had cough, with copious expectoration, which was purulent and fetid. The tumour subsided gradually, and disappeared after two years, and the man recovered.*

In the diagnosis betwixt this disease and phthisis, we must be chiefly regulated by the acute fixed pain, referred to a particular spot. But it must be confessed that the diagnosis is sometimes difficult, and must depend more upon minute attention to the history and phenomena of the case, than upon any particular symptom. When it assumes considerable activity, the diagnosis will be the easier; but as the pulse is often little affected, there is danger of mistaking the pain for a muscular affection, and thus allowing the period to go by, when it may be treated successfully. It is only in its early stage that it is the subject of active practice; in the advanced stages it is probably irremediable. The remedies are few and simple. General bleeding is often required; large and repeated topical bleeding, blistering, issues, rest, and cool spare diet, are the leading articles, with the aid of antimonials, opiates, &c. If the dangerous nature of the disease be overlooked at the commencement, and the case be injudiciously treated by tonics and exercise, the error is likely to be fatal. A young lady, mentioned by Dr. Rush, had pain in the right side, with frequent chills and feverish paroxysms. She recovered by repeated small bleedings. Next summer she was seized with the same symptoms, but put herself under the care of another physician, who recommended country air and exercise. Under this plan she got gradually worse; in autumn was confined to bed; and continued during the winter affected with constant pain in the right side, with inability to lie upon it, and died in May. A remarkable circumstance in the case was, that she had neither cough nor frequency of pulse, until a month before her death. On dissection the left lung was sound, the right adhered extensively; and in separating the adhesions, a sac was discovered containing half a pint of matter.† In some of the cases, the paracentesis

* Edin Medical Essays, Vol. VI. p. 127.
† Rush's Medical Inquiries, Vol. II. p. 112.

thoracis would afford the only chance of relief, but the remedy is very precarious, and the relief at best might be but temporary.*

Sect. VI.—*Disease in the Posterior Mediastinum, and of the Glands connected with the Lungs.*

These affections deserve to be shortly referred to in connection with this inquiry, though they are of much inferior importance in a practical point of view, to the diseases mentioned in the preceding sections. They produce dry cough, with some uneasiness in breathing, and various anomalous symptoms; sometimes pain, referred to the back, so fixed and severe, that it is apt to be mistaken for disease of the spine. A girl, mentioned by Bayle, had dry cough, with wasting, and afterwards severe diarrhœa; she died at last of a short pneumonic attack. There was ulceration of the mucous membrane of the bowels. The lungs were sound, except the appearances of recent inflammation. The only other disease in the thorax was enlargement of the glands at the root of the lungs. In another case by the same writer, there was suppuration in the anterior mediastinum, complicated with disease of the lungs. In a case by Laennec, there was a cyst full of hydatids compressing the lung; and in one by Avenbrugger, there was a solid organized mass behind the left lung. In a case by Bayle, in which the lungs were extensively tubercular, there was also a tubercular mass behind the lungs, and in contact with the vertebræ, several of which were carious from the pressure. I have seen, in a case to be mentioned afterwards, an extensive abscess in the posterior mediastinum, with caries of the vertebræ; but it also was complicated with disease of the lungs. In the first volume of the Medical Communications, a singular case is mentioned, in which ulceration of the lungs had passed backwards, and formed a communication with the œsophagus. I saw lately a man, aged 58, who had a mass of diseased glands on his neck, pain under the sternum, difficult breathing, and an acute pain referred to a small spot about the middle of the spine. After three months he had attacks of headach, with loss of speech, which at first occurred once in two or three days, and continued about fifteen minutes; afterwards they occurred every day, and continued longer; the longest was six hours. He had then double vision and numbness of the right arm. His breathing became more dif-

* See an important case by Dr. Henderson, in the last number of this Journal, with most interesting remarks by Dr. Hennen.

ficult, so that he often could not lie down, and he died suddenly in a fit of suffocation, about three weeks after the appearance of the head symptoms. The lungs were loaded with fluid, but otherwise sound. A chain of diseased glands passed down from the glandular mass on the neck, behind the trachæa and the lungs; the largest were behind the division of the bronchiæ. In the anterior part of the right hemisphere of the brain, there was a tumour the size of a nut, of a reddish brown colour and very firm. No other morbid appearance.

Sect. VII.—*Ulceration of the Lungs, of a healthy character, from Active Inflammation.*

Active inflammation in lungs otherwise healthy, frequently terminates by the formation of an abscess in the substance of the lung. The abscess, in such cases, is distinctly circumscribed, and the matter is contained in a soft sac of coagulable lymph. The pulmonic substance around the abscess is, in some cases, hepatised, in others quite healthy. Such an abscess may burst into the bronchiæ or into the cavity of the pleura, and, in either case, if the collection be extensive, it may be speedily fatal. But it may also be spit up, and has frequently been so, to the extent of lb. i. or more, in a very short time after the first bursting. There is thus left a cavity like that of any other abscess, which may then take on a healthy action, and gradually heal. In this case, cough continues, with purulent expectoration, for a longer or shorter time, according to the circumstances of the case, but the expectoration gradually diminishes in quantity, and at last disappears, the cough also ceasing along with it. The healing of such an abscess may be retarded by a variety of causes, and if the disease has been extensive, or the strength of the patient much reduced, he may sink under it, with all the usual symptoms of consumption. But it is a disease quite distinct from consumption, and one which, in a great proportion of cases, we may hope will terminate in recovery. I shall afterwards have occasion to refer to this subject, and to investigate, by examples, the difference betwixt this affection and the unhealthy ulceration which constitutes consumption.

Sect. VIII.—*Hæmoptysis and its Consequences.*

Facts and minute observations are wanting on this important subject, but, from the whole phenomena of the disease, it is pro-

bable that hæmoptysis ought to be viewed under several aspects, differing considerably from each other.

I. In such an organ as the lungs, in a great measure composed of vessels, it is not wonderful that derangements of circulation should take place, and that a vessel should occasionally give way. This may occur from general plethora, from occasional changes in the general circulation, as in women from suppression of the menses; and it may arise from causes affecting more immediately the lungs themselves. The most obvious and intelligible of these is, any obstruction to the return of the blood from the lungs to the left side of the heart. Such an obstruction existing while the full quantity is sent into the lungs from the right ventricle, a state of the lungs takes place, in some degree analagous to that of the brain in simple apoplexy, and we readily conceive how a branch should give way. The principal causes of this condition are diseases of the left side of the heart, and induration of a part of the lungs. Whatever other causes give rise to it, may prove causes of hæmoptysis, but in these there is considerable obscurity. We call it congestion, but this merely expresses the fact, without explaining any thing; the question immediately recurs, Whence this congestion, except from the organic causes referred to? It seems to proceed from a certain inflammatory state of the substance of the lungs. Hence arises the genuine acute hæmoptysis, which is nearly allied to peripneumonia, and requires the same treatment in the most decided manner. Under this treatment we expect it to terminate favourably, in a great proportion of cases. The breach of continuity which has taken place is equivalent to a wound; this may either heal, or may advance to suppuration, and produce purulent expectoration. If this take place in lungs otherwise sound, it may terminate favourably, like the healthy ulceration already referred to; if it take place in unsound lungs, the ulceration will be unhealthy, and will probably lead to consumption.

II. There seems to be a modification of hæmoptysis, differing materially from the former, though assuming an active form, in which the hæmorrhage is from the vessels of the bronchial membrane. It appears to be preceded and attended by less dyspnœa and oppression of the thorax than the former, and rather by rawness and tenderness, with a sharp irritating cough, having the characters of the catarrhal or bronchial inflammation, as the former has of the peripneumonic. The blood is generally in smaller quantity, and mixed with frothy fluid in the early stages; after-

wards with the expectoration proper to the inflammation of the bronchial membrane. In several of the cases formerly described, we have seen it combined with the disease of the bronchial membrane; and a case, described by Portal, fixes still more distinctly the existence of this source of the hæmorrhage, without connexion with any disease of the lungs. A young man was liable to attacks of hæmoptysis, which occurred generally several times every month. After this had continued for two years, he died of an affection of the brain. The lungs were found perfectly sound; some of the bronchial glands were much enlarged, and covered with blood-vessels. Some of these vessels were distinctly traced terminating by open extremities on the surface of the bronchial membrane, and appeared evidently to have been the source of the hæmorrhage. This bronchial hæmoptysis is nearly allied to, and perhaps usually accompanied by, the inflammation of the bronchial membrane, and may be followed by the symptoms of that affection in its chronic state, with puriform expectoration, and many of the appearances of consumption. But it is an affection quite distinct from consumption, and affording a much more favourable prognosis.

III. The two former affections are more or less acute diseases. There seems to be a third modification of hæmoptysis, which is not in any degree acute. It appears to arise from the immediate rupture of a vessel, in consequence of disease of its coats, without the peripneumonic congestion of the first species, or the bronchial disease of the second. The patients are generally pale, feeble, and scrofulous-looking and the pulse weak and slow. It may probably arise either from the pulmonary vessels, or from the bronchial membrane, and, in both cases, seems to be connected with tubercular disease. In the former case, therefore, it is very likely to be followed by consumption; in the latter, by the chronic disease of the bronchial membrane in its most unfavourable form.

IV. A fourth modification arises from a vessel giving way from previous ulceration in a case of true consumption. It is distinguished by being preceded by purulent expectoration. It is often immediately fatal, and at best admits only of palliative treatment.

To the various affections resembling consumption, which have been referred to, we ought, perhaps, to add some remarkable cases, in which similar symptoms were kept up by extraneous

substances lodging in the bronchiæ. A man, mentioned by Mr. Howship, had violent cough, with copious expectoration, and frequent hæmoptysis; constant fixed pain in the right side of the thorax, and extreme emaciation After four months, when his case was considered as hopeless, he brought up, in a violent fit of coughing, a small nail, 7-8 of an inch in length. Eleven or twelve years have elapsed since this event, during which he has enjoyed tolerable health, though liable at times to cough and hæmoptysis. He was sensible of the nail slipping down his throat, while he held it in his mouth when at work, immediately before the commencement of his illness.* A man, mentioned by Mr. Arnot, after suffering severely from cough and dyspnœa for more than a month, brought up a spongy piece of bone, the size of a hazel-nut, and got well speedily.† In the London Medical Journal for 1786, Mr. Holman mentions a man who had severe cough, purulent expectoration, mixed with blood, hectic fever, profuse night-sweats, and diarrhœa. After these symptoms had continued till he was reduced to a state resembling the last stage of consumption, he one day spit up a pint of blood, and soon after coughed up a piece of bone, measuring 6-8 of an inch in length, and weighing six grains. His alarming symptoms ceased almost immediately, and he was soon in perfect health. He remembered having swallowed a piece of bone fifteen years before, which stuck in his throat, and was pushed down by a probang. From that time he had been subject to cough, which had gradually increased. A woman, mentioned by Bartholinus, brought up, under similar circumstances, a small kernel of a nut, and got well immediately. The German translator of Portal mentions a woman, who, after being considered as phthisical for some time, brought up, in a violent fit of coughing, a stony concretion, half an inch long, and soon after got well. In several cases referred to by Laennec, hydatids were expectorated, with relief of pectoral symptoms of some standing; and Borelli mentions a gentleman, who recovered from a state of extreme danger, by coughing up a small piece of nutmeg, which had slipped into the larynx, and had been the cause of complaints, which were considered as consumptive.

These observations, on *diseases resembling consumption*, I submit as a slight and imperfect outline of a most extensive subject, in the hope that they may serve to show the importance of it, and

* Howship's Obs. in Surgery and Morbid Anatomy, p. 222.
† Edinburgh Med. Essays, Vol. VI. p. 116.

to direct to it the attention of those better qualified, both to correct the outline, and to fill up the details. The whole is at present in the most rude and imperfect state, and that most important branch of it, the diagnosis, is entirely in its infancy. But it is one of the most interesting subjects that can occupy the attention of the British practitioner, and his utmost exertions will be amply rewarded, if any degree of precision can be introduced into the pathology of consumption. At present, it is certainly vague and unsatisfactory in the greatest degree, while, in the British Islands alone, the annual mortality from consumptive diseases is from fifty-five to sixty thousand.

SELECTED REVIEWS.

Exposition of the Doctrine of M. Broussais

[CONCLUDED.]

[From the London Medical and Physical Journal, of February, 1820.]

Before we proceed to the particular application of the facts detailed in the preceding article, it may be proper to repeat some remarks made in it, relating to the different consequences resulting from the same causes in different individuals; as they tend to explain several difficulties in the history of some diseases that have led pathologists to suppose the existence of some latent vice to which they owe their immediate origin. It is the superiority of the development of the nervous and sanguiferous systems, which, according to M. Broussais, disposes certain persons to the neuroses, to acute inflammations, and to hæmorrhages; whilst an analogous constitutional disposition, but in which the lymphatic system enjoys a remarkable predominance of action, is the organic condition which renders other persons so readily liable to morbid enlargement of the lymphatic glands, and the degeneration of structure which we have already particularly described. There are many persons who are remarkable for the little energy with which the circulation is effected in them: these are all disposed to irritations of the lymphatic vessels and ganglions, and to those degenerescences of structure which have been termed organic lesions; whilst the same causes to which they owe their origin, will, in persons whose circulation is carried on with greater vigour, give rise to violent phlegmasiæ. Those degenerescences have been shown to bear a near analogy to each other: nearly the whole of them have been observed in almost every part of the animal economy; but they, or the symptoms resulting from them, have received different names from nosologists, according as they may have their seat in particular organs. There is this analogy especially between tubercular phthisis, scrofula, and the affection causing tabes mesenterica.

The causes of enlargement of the lymphatic glands all act, either by irritating the glands themselves, or by exciting the surfaces on which the extremities of the absorbent vessels communicating with them terminate. The former is the less frequent, and cannot indeed exert its influence on the glands contained in the great cavities of the body: but the latter is very frequent, and is, as we shall presently show, according to M. Broussais, the general causes of phthisis. Inflammation of any organ produces enlargement of the glands whose vessels originate from the inflamed part; and, if the excitement thus effected becomes chronic, the glands remain enlarged, they pass to the tuberculous state, and, at length, the same degenerescence takes place, from the laws of association so remarkable between the tissues of the same structure and properties, in the glands of other parts of the body, so as to produce a diathesis analogous to the scrofulous. It has been denied that lymphatic glands, that have become swelled from sympathy ever become tuberculous; but M. Broussais asserts, that he has witnessed it in the exterior parts of the body in the most indubitable manner: and thence it is that inflammation of the mucous membrane of the lungs is a very frequent, and indeed almost the exclusive, cause of tubercular phthisis. The same origin applies to tabes mesenterica. The signs of irritation of the stomach and bowels, which are evident throughout its whole duration; the causes which determine it; the results of the examination of dead bodies; the good effects of abstinence from food, of cooling drinks and of revulsies, conjoin to prove, says M. Broussais, that tabes mesenterica is nothing else than irritation of the mucous membrane of the gastric canal, especially of the small intestines. (The enlarged glands, it is said in the Lectures, correspond especially to the parts of the intestine in which the inflammation had been most severe.) This irritation, which is similar to that in gastro enteritis in general, produces with more facility that enlargement of the mesenteric glands in children, because those organs are in them much developed, and enjoy a greater relative degree of vital energy than at any other period of life.

We return to the consideration of phthisis in a more particular manner. M. Broussais has shown that this affection is the almost inevitable consequence of prolonged irritation of the mucous membrane of the lungs in lymphatic subjects; and he adduces the most powerful evidence to show that this is its almost exclusive origin. During the twelve years that he accompanied the French army through the principal countries on the continent of Europe, he had frequent occasion to witness the confirmation of

the above statement, and, at the same time, of determining the influence of a cold and moist climate in its production.

When I arrived at the army in Holland, he says, I found phthisis so frequent there, that, whenever a catarrh, accidentally arising from cold, was prolonged in a fair, slender, and lymphatic subject, it was necessary, in a manner, to despair of his recovery. On opening these patients, the lungs were found studded with tubercles and granulations. M. Broussais then suspected, that, if those patients had lived in a warmer climate, and not contracted the inflammation which marked the origin of the disease, they would not have fallen victims to phthisis; and that, if men of the same constitution, who were not yet affected with any disease, continued to be exposed to cold, they might, in contracting pulmonary inflammation, have the fate of their comrades; whilst, if they passed into a warm climate, they would escape that fatal disease. This supposition became realized; the army was transported into Italy; phthisis then became scarce, exactly in proportion to catarrh and pneumonia. Here, and afterwards in the south of Spain, M. Broussais opened a great number of the bodies of subjects of the constitution termed phthisical, who had died of other affections; and he never found tubercles in the lungs, except in a very few instances, where that organ had been irritated for a long time before death; that is to say, when the patients had suffered as they would have done in a colder country. These statements furnish powerful arguments against the opinions of those who suppose the tubercles to be the exciting cause of the inflammation; especially with the additional one, that after twelve years experience, M. Broussais says he saw but very few men fall into phthisis, who had not, even under his own observation, been affected with prolonged catarrhs, or peripneumonia.

The various appearances offered by the tuberculous and other degenerescences described in the preceding article, are commonly witnessed in the lungs, and not unfrequently at the same time;—a circumstance arising from their complex structure, into which nearly all the elementary tissues of the body enter. It is hardly necessary to remark, that the same irritative cause will produce different effects in each of those tissues, from the difference in their structure, and from its longer or shorter duration. Thus, we sometimes find in the lungs, indurations, some of a white, others of a yellowish colour, in masses more or less considerable in size, and presenting appearances more or less analogous with what is termed schirrous and tuberculous matter; in the midst of which, calculous and osseous concretions have been observed. In other subjects, there is a confused mass of black, grey, and yellowish spots, forming so many globules, some of them hard, and

others friable: the fluid they have contained has shown the same varieties of character, being sometimes purulent, sometimes sanious, at others reddish and cream-like, &c. Ulcers, and bands of cellular tissue, traversing the lungs in various directions, are other varieties of organic lesion here observed. M. Broussais has not been able to determine precisely the causes of those varieties, which have furnished nosologists with the bases for so many distinct species of the disease. Some of the more strongly-marked characters may, however, be probably referred to the following laws: 1°. Active inflammation, affecting chiefly the sanguiferous vessels, will make the carnification of the lungs prevail; but this may not be the only alteration of structure, if the organs have been long in a state of irritation. 2°. A general disposition to irritation of the lymphatics, proved by other affections entirely of this nature, will lead to a predominant tuberculous disorganization. 3°. There will also be an affection of the same organs, happening as a consequence of irritation of the lymphatics of the cellular texture, which constitutes schirrus, when those irritations have existed for a long time in some external organ.

The scrofulous diathesis is, according to M. Broussais, merely the lymphatic constitution carried to the highest degree, which may be transmitted from parents to their children, just as the sanguineous and nervous temperaments may be so transferred; but scrofula cannot thence be said to be a latent disease in persons of that constitution, any more than pleurisy, or hepatitis, or other acute inflammatory affection, to which those of the sanguineous temperament are so especially liable, can be said to exist in these as constitutional diseases. This is reducing what is called the *scrofulous habit* to its true character.

In the treatment of *scrofula*, the first indication which presents itself, when the patient only shows a disposition to that malady, is to combat this disposition by hygienic measures. We cannot then act immediately on the lymphatic system to diminish its action, we must, therefore, endeavour to establish a more near equilibrium, by giving to the sanguineous system an energy which may remove the relative preponderance of the lymphatic vessels. This may be attempted by moderate exercises, especially in the open air, generous diet, wine, &c.: but, in giving this impulse to the system, it will be necessary to avert carefully all causes of more especially local irritation; the susceptibility of the stomach to excitation must be well attended to, and cold and humidity avoided. When the glands on the exterior parts of the body are tumefied, the same means may be persisted in; because this irritation very frequently arises from external causes, especially

change of temperature, or from some part of the absorbent system being irritated in the manner, and with the results described on a former occasion. But this is not the case with the glands of the lungs and mesentery: here, according to M. Broussais, it is irritation of the mucous surfaces on which the vessels communicating with them open, which has been the origin of the affection of the glands. Here it is the inflammation of the membranous surfaces that requires our principal care in the first instance; but, in proportion as that inflammation subsides, the treatment of the enlargement of the glands that may be suspected to remain, should approximate to the mode already indicated for scrofula, when affecting the lymphatics of the exterior parts of the body. But this new indication, which appears only second in order in inflammatory phthisis, the causes of which are most evident, becomes primitive and fundamental in those where the phlogosis is developed only consecutively to the lymphatic disorder. The basis of the treatment, according to the former indication, should be placed on the therapeutics for catarrh, peripneumonia, and pleurisy; and, if the inflammation assumes a chronic form, it will be necessary to avoid the occasional causes, as cold and humid air, or any other irritating cause depending on the habits of life of the patient. The measures, speaking generally, are blood-letting, in the first instance, with restricted diet, and other analogous sedative measures; then revulsies; and, at length, a recourse to means proper to balance the vitality between the sanguiferous and lymphatic systems. These measures will require modification, according to the particular forms of disease under which the irritation of the lymphatics has its origin: 1° When *pneumonia* is the cause, the antiphlogistic measures should be directly debilitant. Free blood letting will be necessary. The revulsies appropriate to it, are those which evacuate distant vessels without irritating them. The regimen must be very restricted.

2°. The *catarrhal phthisis* requires a combination of antiphlogistics, sedatives, and revulsies, restricted diet in the first instance, then nourishing without being stimulant. In the first instance, the action of the sanguiferous system should be moderated by general or local bleeding, according to particular circumstances; cooling drinks, and abstinence from food; cutaneous transpiration should be favoured by the pediluvium, during the violence of the erethism; and, when this diminishes, by vesicatories and rubefacients. As soon as white and thick expectoration announces a resolution of the inflammation, tonics may be combined with emollients, the patient may be permitted to take food, and gradually to return to his ordinary mode of life. When patients

have previously been in a state of great exhaustion, the resolutive expectoration either does not take place, or it is too far prolonged. Thus, the chronic state appears under two forms: 1°, with dry cough, or but a little occasional spitting of transparent mucus; 2°, with abundant expectoration of thick and opaque matter. The patient's diet should here be nourishing, and wine and other tonics directed; only observing that he eats but little towards the evening, lest some febrile exacerbation should be then induced. A weak decoction of cinchona, combined with mucilages, has appeared to M. Broussais to be the most proper medicine.

3°. *Pleuritic phthisis* does not, unless the patient be plethoric, require the opening of the large veins, like the pneumonic: cupping, and the application of leeches, are more appropriate, followed by the tepid bath, emollient applications over the chest, to encourage the oozing of blood after the leeches have been removed; and slightly diaphoretic drinks. Vesicatories, until there are evident signs of alleviation, M. Broussais considers, are not advisable; principally because they often lead the practitioner to suppose that the inflammation is removed, when it exists with its original violence. In many cases, he found the pain in the chest disappear on the production of a blister externally, and yet the patients have died after a few days. Dissection showed that the inflammation had persisted with its original intensity, although the pain, considered so constant a symptom of it, had been totally removed. The diet should be aqueous, or vegetable; and the treatment indicated be continued until the most complete re-establishment of the functions: there is nothing else can attest that the inflammation of the membrane is entirely removed. From a want of due attention to this, many patients have fallen into consumption; the slight uneasiness about the chest being considered only as an indolent consequence of the previous inflammation, when it has really arisen from a less intense degree of that disorder. The utmost quiet of body, the avoiding of cold air, the use of tepid baths, and of flannel worn next the skin, with antiphlogistics adapted to the degree of the complaint, must be directed. It is this class of medicines which generally are the most efficacious against the cough that may remain; but, when this appears to be kept up by an irritation of the mucous membrane of the larynx and bronchiæ, and is not calmed by the measures indicated, the use of opium remains: "it is always the best resource against those irritations of the chest which refuse to give way to antiphlogistics, and which are exasperated by irritatant revulsies."

4°. The *phthisis dependant on the profession and habits of life*, requires the avoidance of the exciting causes, and the application of the foregoing measures, adapted to the particular circumstances of the individual case.

5°. *Phthisis consequent on continued fevers*, or, rather, the irritations of the lungs which succeed to those diseases, and which, by their obstinacy, lead to a fear of the formation of tubercles, requires some distinction in its treatment: 1°, if the inflammation is vehement, and the patient but little exhausted, the most rigorous antiphlogistic regimen, especially almost total abstinence from food, although it may be urgently called for by the appetite; besides this, revulsive measures proportionate to the excitability of the subject: 2°, if the fever has produced much debility, if the inflammation be languid, obscure, or if an abundant expectoration exists, sudorifics and revulsive irritants are well indicated; observing, however, that any febrile action that may remain be not augmented by them. The effects of those means should be confined to the secretory, or excretory, capillary vessels; the actions of which we wish to augment, in order to destroy the disposition which directs the fluids towards the lungs. In some cases of this kind, it has, however, been more advantageous to introduce into the stomach some astringent tonic, the effects of which are opposite to those of the foregoing agents,—such as cinchona. Morton relates instances of surprising cures effected by this bark, in obstinate coughs with hectic fever, and very abundant expectoration indicating suppuration. This success has also been obtained by many other practitioners, and by M. Broussais. The cases in which this remedy is appropriate, may be thus generalized: (*a*) those consequent on diseases which have produced considerable debility in a short time,—as typhous fevers, excessive hæmorrhages, &c.; (*b*) when the patient is of a lax, feeble, lymphatic, temperament, and the stomach rather indolent; (*c*) in persons living in cold and humid countries, and in large and populous cities, rather than in warm latitudes, exposed situations, and villages.

6°. *Scorbutic phthisis*, or chronic irritation of the lungs modified by the scorbutic diathesis, will require being treated according to the indications for the cure of the latter affection, which will be hereafter considered.

7°. Irritation of the lungs tending to the production of phthisis, provoked by suppressed cutaneous affections, hæmorrhages, and inflammations, should generally be combatted by the antiphlogistic regimen, aided by other measures adapted to the particular indications of the individual case.

The irritation of the mucous membrane of the intestinal canal,

tending to the production of tabes mesenterica, must be treated according to the principles already developed in some of the preceding articles.

The inflammations which appear in subjects affected with scrofula, are produced by the same causes, and should be treated after the same principles, as those occurring in persons in general; only bearing in mind the disposition to activity of the lymphatic vessels, and relative want of vigour of the sanguiferous system, which should lead to a more reserved use of active antiphlogistics than in persons of the opposite disposition, and to the employment of revulsives as soon as the subsidence of the more severe degree of the inflammation will permit. It is an error to suppose, because tonics tend to remove the disposition to scrofula, that they are appropriate for the treatment of irritation of the sanguiferous system which may accompany, or be consequent on, the existence of that disposition.

In a former part of this exposition (vol. xli. p. 243,) we stated that "when the nutritive materials are insufficient in quantity, or are to a certain degree improper for nutrition, the animal economy falls into a state of debility, which often proceeds to actual disease;" that "other agents, such as cold and humid air, painful moral affections, &c. frequently debilitate the system, without producing previous irritation;" and that "the continued use of innutritious excitants will produce local irritation, at the same time that they influence the rest of the system in the manner just indicated." These principles point out the origin and nature of scurvy. Thus, it is observed as a consequence of the long-continued use of salted, smoked, and dried, aliments, as the principal food, whatever may be the qualities of the air, water, and other circumstances, surrounding the patients of that disease. Those materials, so ill appropriate for the alimentation of the body, although at first only leading to a decomposition of our organs from want of nutrition, do not always confine their effects to this; they often produce an irritation of the whole lining of the alimentary canal that passes at length to inflammation and disorganization; and at length the same effects ensue in the serous membranes, in the muscles, in the articular capsules, and even in the extremities of the spongy bones. Thus, we find in the dead bodies of scorbutic patients, phlegmasiæ of all species, with morbid adhesions, sanguineous and serous effusions, depositions of matter and gangrene in the parenchyma of the liver and lungs; the cavities of the joints filled with fluids of different kinds, and their capsules thickened and disorganized; the cartilages and heads of the bones carious and friable, the epiphyses separated and float-

ing in sanious fluids; the muscles not only gorged with blood, hard, and infiltrated, but even reduced to a sort of clotted, half-putrid, mass, sometimes exactly filling their aponeurotic sheaths; sometimes the muscular layers are shrivelled, and contain pus similar to that of phlegmonous abscesses. But, in the midst of all these disorganizations, the brain and rest of the nervous system appear to be unaffected. This, as we shall presently show, will explain one very remarkable circumstance characteristic of this disease. Let us first trace the general progress of the phenomena by which it is constituted. The species of food which we stated to give rise to scurvy, fails, in the first instance, to supply to the blood the necessary quantity of nutritious materials: the muscles, which, in the healthy state of that fluid, appropriate to themselves the fibrine it contains, no longer obtaining from it the substance necessary for their action, experience the first effects in this disease. Their contractile power is gradually weakened, and is at length totally lost: thence the langour of the patients, the extreme fatigue they suffer from the slightest movements, and at last their absolute impossibility to move their limbs. The heart participates in this debility of the exterior muscles: it no longer propels the blood with any considerable force through the arteries; that fluid stagnates in its cavities, in the large veins, and successively in all parts of the body. The weakness of the heart is so great in some cases, that it becomes distended by the blood with which it is surcharged, and is found in the dead body dilated to a very considerable extent: and, even in those patients who recover, it remains particularly liable to aneurismal dilation. Absorption is then necessarily obstructed; collections of serous fluids take place in the extremities, and in the different visceral cavities. Thus, the first morbid effects in scurvy are of an organic nature, or, in other words, exist in the change in the properties of the solids; but a depraved state of the fluids soon ensues; the blood loses its proper constitution, and the secretory organs, languishing in their functions, give rise to an accumulation of effete matter in the vessels, which irritates the organs with which it is in contact, and produces at length the inflammations in the different parts which have been pointed out. It should be remembered, too, that the subjects are liable to have inflammation excited by all the common external causes of that affection, as well as by the peculiar internal ones that have just been designated.

"Represent to yourself," says M. Broussais, "the capillaries and the muscles of scorbutics in that state of weakness which depends on the want of adhesion between their molecules: what should be the result of the precipitated vibrations and of the en-

gorgement which the phlegmasiæ determine in them with the more violence, because the nervous system, the only cause of organic movements, is perfectly healthy in this affection?—a very ready passage to gangrene, a rapid disorganization." The occurrence of such intense inflammation in patients affected with scurvy, has been brought forward as an argument in favour of the origin of inflammation from local debility,—that is, that debility of the vessels immediately give rise to it; but the above observations will show on what improper grounds. The hæmorrhages which take place in scurvy may, according to the opinion of M. Broussais, be of two species: the one similar to acute hæmorrhages in general, from irritation of the sanguineous capillaries; the other from disorganization of those vessels. The ecchymoses, as they generally appear, probably depend on the obstruction to the progress of the blood in the veins. Although it is stated in the foregoing account, that the alteration in the properties of the blood gives rise to inflammation of various parts in scurvy, yet this is by no means a frequent occurrence; and it is never witnessed except in very prolonged cases of the disease, except the patient makes use of alcoholic fluids, spices, or other powerfully irritating matters; and these probably effect the inflammation and disorganizations alluded to, by first producing irritation of the gastric organs, whence it is communicated to the rest of the system. We find persons suffer scurvy for several months, who use a sort of diet not calculated to produce irritation of the stomach, who have become reduced to the utmost state of debility, without those disorganizations taking place; but if, from any accidental cause, inflammation of the stomach is induced, they immediately follow, and terminate the life of the patient without delay: and dissection shows that the disorder may terminate fatally without the disorganizations resulting from inflammation having taken place. This explains how persons bear deprivation of food to a great extent, for a long period, without becoming affected with the phenomena characteristic of scurvy: to produce these, the aliment must possess more or less irritating qualities; and, in proportion to the degree of excitement of the gastric organs, will be the severity of the characters of this disease.

The nature of scurvy, then, according to the doctrine of M. Broussais, consists in, 1st. Alteration of the blood, in consequence of want of proper nutrition; 2d, irritation of the mucous membranes of the gastric organs; 3d, weakness, and at length the loss, of muscular contractility; 4th, obstruction to the circulation of the blood from debility of the heart; 5th, irritation more or less considerable of the sanguineous capillary vessels in all the organs,

extravasation of blood, destruction of different parts; and, in the midst of this extensive disorder, integrity of the texture and functions of the nervous system.

The treatment of scurvy is so clearly pointed out by the foregoing theory, that it is not necessary to say much on this subject; it is the same, according to this doctrine, as that which all judicious physicians have stated to be most beneficial; fresh vegetables and acidulous fruits in the first instance, and then a more liberal supply of nutritious food. The above doctrine, however, furnishes an indication against the use of stimulants that has sometimes been deviated from; but always with injury when employed before the state of irritation of the stomach and small intestines has been removed. "What a lesson for the Brunonians does this disease afford, (exclaims M. Broussais,) who personify the results of our functions, and who have only two confused ideas, according to which they pretend to explain all the phenomena of the living body!"

MUCOUS MEMBRANE OF THE LUNGS.

1. *A Treatise on Inflammation of the Mucous Membrane of the Lungs; to which is prefixed an Experimental Inquiry respecting the Contractile Power of the Blood Vessels, and the Nature of Inflammation.* By CHARLES HASTINGS, M. D. Physician to the Worcester Infirmary, &c. One vol. 8vo, pp. 420. London, 1820.

2. *Histoire des Phlegmasies, ou Inflammations Chroniques, fondées sur de nouvelles Observations de Clinique, et d'Anatomie Pathologique.* Par F. J. V. BROUSSAIS, Docteur en Medicine, &c. &c. Two vols. 8vo, 1232 pages. Second Edition. Paris, 1816.

3. *Observations on the Inflammations of the Mucous Membranes of the Organs of Respiration.* By THOMAS ALCOCK, Esq. Surgeon. (Medical Intelligencer, No. 7 & 8.)

4. *Dictionnaire des Sciences Medicales.* Tome 32, Article "*Membrane.*" Par L. R. VILLERME, M. D.

5. *An Essay towards a Pathology of Eruptive Fevers. Delivered as a Gulstonian Lecture, before the Royal College of Physicians, London, in the year* 1820. By RICHARD HARRISON, M. D. F. L. S. Fellow of the Royal College of Physicians, &c. &c. &c.
London Med. and Phys. Journal, July 1820

[From the London Medico-Chirurgical Review, for Dec. 1820.]

The current of medical investigation and curiosity has lately set, with considerable force, towards the pathology of the Mucous Membranes—more especially those which line the aerial passages. This current of attention may appear to be too strong, and too exclusively directed towards a single point; but we believe that medical science is not likely to be retarded, in the end, by such accidents. A certain degree of enthusiasm seems necessary to ensure success in all pursuits: and it would be bad policy to repress it in a profession like ours, where there exist already so many circumstances to chill the zeal, damp the ardour, and ex-

haust the patience of those who devote their time and talent to the investigation of diseases.

It is now thirty years since Theophilus Bordeu, of Montpellier, published a volume on the "*Tissu Muqueux, ou l'Organe Cellulaire, et sur quelques Maladies de la Poitrine;*" but we confess that an attentive perusal of this work has furnished us with little knowledge on the subject. M. Pinel appears to have been the first who drew order out of chaos respecting the different tissues of the body; and Bichat, seizing the idea, carried his investigations (as far as anatomy and physiology are concerned) to the utmost extent; for very little has been added to the researches of this powerful genius. A slight anatomico-physiological sketch of the tissue which forms the subject of this article is indispensable necessary towards a pothological delineation.

The mucous membrane which lines the air passages of the lungs, and the whole alimentary canal, from the mouth to the anus, is composed of three tissues or structures—the chorion, papillæ, and epidermis. This membrane forms a kind of internal skin, and is strikingly analagous to the cutaneous surface, in its organization, functions, and vital properties. The chorion of the mucous membrane, which gives form and substance to this tissue, is of a soft and spongy texture, which Bichat conceived to be very much modified by its own secretions, as well as those foreign substances which constantly come in contact with it. It is curious that all the mucous surfaces, especially those of the stomach, have the property of coagulating milk, as is commonly seen in the process of making rennet with the paunches of animals. The papillæ or villi of the mucous membrane are so numerous and minute, that they generally appear as a polished surface, yet their existence is unquestionably proved. They are of a pyramidal shape, and very various in size, in different parts of the mucous tissue. The free or internal surface of this membrane is covered with an epidermis, analagous to that of the skin, but very fine, insensible, and apparently for the purpose of defending the chorion and papillæ from the rude action of passing substances. Throughout the whole extent of the mucous membrane, and embedded in the chorion, are scattered innumerable glands, which secrete and pour out, by imperceptible orifices, a mucilaginous fluid, which lubricates their surface. These glands are very vascular, and doubtless are proportionally supplied with nerves. Whenever the mucous membrane is irritated the function of secretion is increased. The greatest degree of sensibility resides at the extremities of the mucous membranes, and any stimulus applied there excites the action of the mucous glands throughout the whole extent of tissue. This may account for many phenomena which we daily witness: thus

the introduction of a suppository, or even a bougie into the rectum, will often excite the action of the whole intestinal tube. Bichat, instead of stimulating the cutaneous surface of a hemiphlegic patient, has, more than once, pursued the following plan. He introduced a sound into the urethra, and a bougie into each nostril, while a surgeon irritated, at intervals, the uvula. The patients appeared to be much more roused by these means than by blisters to the skin. "Would it not be better (says Bichat) to produce an artificial catarrh in the mucous membrane of the nostril corresponding with an inflamed eye, than apply a vesicatory externally?"

As the mucous membranes are constantly exposed to the contact of substances extraneous to those of the animal, we may perhaps consider one office of them to be that of interposing a limit or barrier between our organs and those heterogeneous bodies—in short, officiating as a skin to the internal viscera. These mucous surfaces, when they happen to protrude without the body, as for instance, in inversio uteri, appear to take on the nature of common skin, in a great degree. In the impunity with which they may be exposed to the air, they exhibit a striking contrast with the serous membranes of the body. Into the structure of the mucous membranes a vast number of blood-vessels, nerves, exhalents, and absorbents are crowded, and no tissue in the human frame is endued with a higher degree of excitability, or irritability. Each mucous membrane, however, is specifically excited by a specific substance—as that of the bladder by urine, that of the lungs by air, &c. But when their organic sensibility is disturbed by disease, even their proper fluids will occasion pain, as we every day witness.

When we contemplate the great extent of the mucous surfaces, their importance, even as emunctories, which separate their fluids from the blood, rises in our consideration. Any excess or deficiency in their functions must, and evidently does, derange the general health in a very powerful manner. But their extensive chain of sympathies with almost every structure in the body, especially the skin, deserves the utmost attention of the physician; for it is principally in this way that we can trace the immense range of their influence on distant functions and structures of the human frame. In a future number we shall investigate exclusively the mucous membrane of the digestive apparatus, and then will be the proper time for taking up the subject of morbid sympathies. At present we confine our pathological researches and observations to the membrane lining the air passages.

Some physiologists believe that the mucous membrane of the lungs plays an important part in the change which is produced in

the blood while passing through the pulmonary capillaries. The exhalation from the mucous tissue of the lungs is sufficiently obvious; but whether the fluid exhaled be merely aqueous, or whether any of the mucous fluid can be converted into vapour at the temperature of the human body, is doubtful. Indeed we are far from being assured that the fluids which lubricate the pulmonary surfaces in a state of health, are of that viscid nature which we observe them to be under other circumstances. It is, on the contrary, exceedingly probable that this viscidity prevents, in some measure, that change in the blood, usually effected by respiration, and, in many cases, goes far by its tenacity and accumulation to prevent that change entirely, and thus destroy life. In perfect health there appears to be no expectoration—the fluid secreted being completely exhaled or absorbed.

It is remarked by Bichat, that where the mucous membranes take their origins from the skin, and where their animal sensibility is most exquisite, they are there supplied with nerves from the cerebrum; as, for instance, the pituitary membrane, the conjunctiva, &c. while the deep-seated portions of the mucous membranes are supplied chiefly by the ganglia, as the intestines, excretory ducts, &c. Although, in health, the air and aliments produce no sensation in the mucous tissues to which they are applied, excepting at the origins of these tissues, as above observed, yet, when they are in a state of inflammation, the same substances produce much uneasiness; and in this state a great quantity of first watery and then viscid mucus, or even pus, is poured out, as we see in pulmonary and vesical catarrh, dysentery, &c. There can be no doubt that this increased secretion is the means which nature employs for the removal of the irritation or inflammation, in the same way that a watery fluid is poured out from the serous membranes, to relieve their vascular turgescence. Yet an excess in either of these processes is attended with great danger. "No sooner does the secretion into the air passages exceed that which can be removed by expectoration, than accumulation begins, and a part of the cells of the lungs, which should receive air, becomes filled with secreted fluid. This increasing must necessarily prevent the due performance of the function of respiration—that function without which life cannot exist. The blood no longer is changed from the dark or venous to the vermillion hue, and the colour of the body partakes of the leaden or livid shade;—if the accumulation proceed, respiration becomes more and more obstructed, the phlegm may be heard rattling in the air passages—and the patient sinks exhausted and suffocated."*

* Alcock.

It is known to our readers that, in this country, Dr. Harrison, Dr. Hastings, Mr. Alcock, and a few others, have recently drawn the attention of the profession to the pathological affinity of certain eruptive and other diseases with inflammation of the mucous membranes. This affinity has, for some years, been observed, and fully acknowledged on the continent.

"It is," says Villermé, "to irritation of the mucous membranes, particularly those of the digestive organs, that we are to attribute a great many of the cutaneous phlegmasiæ, hitherto regarded as idiopathic affections. The miliary eruption appears to be always symptomatic. We invariably find, in individual cases, and in the histories of epidemic miliary fevers, that all the symptoms of irritation in the mucous membranes preceded the cutaneous eruption, and coincided with it. On dissection too, the physician has always found unequivocal traces of irritation and violent inflammation of some mucous membrane, falsely regarded as the *effect*, but evidently the *cause* of the miliary eruption. It is equally certain that in measles the mucous membranes are primarily affected, and that, from their tissue the irritation is reflected on the cutaneous surface:—in short, that the measles is only an epiphenomenon or appendix of the internal irritation. La Rougiole n'est qu'un appendice de l'irritation interne."—*Dict. des Sciences Med. Tom.* 32, *p.* 218.

In our review of Dr. Clark's work, April, 1820, p. 587, we noticed the investigations of our continental brethren relative to the pathology of small pox. All those who died of this disease at the "Maison des Enfans" (and the mortality was great) were examined, and the appearances were inflammation and ulceration of the internal coat of the intestines; with pustular eruptions there, and on the surface of the peritoneum. In three cases a croupy false membrane was found lining the whole alimentary canal, from the œsophagus to the rectum. Mr. Alcock, whose dissections showed the mucous membrane of the lungs more frequently affected, in variola, than that of the digestive organs, suspects that the French physicians did not examine the air passages. We have reason to know, however, that they left no important part of the body unexplored. But the difference between the climate of England and France, together with the heating regimen which, for a time, was employed in the MAISON DES ENFANS, will easily account for the mucous membrane of the lungs being the principal focus of disease in this country, while that of the digestive apparatus bore the onus of irritation in Paris.

Mr. Alcock, whose opportunities for prosecuting investigations of this kind are great, and whose originality of mind qualifies him for the task, observes that:

In measles we trace the first appearances in the watery and suffused eyes—the discharge from the nostrils—the sneezing and other catarrh-

al symptoms, which show the inflammation of the mucous surfaces lining these parts: the inflammation extends inwards, and the throat becomes affected; as is evident, on inspection, and as might be inferred from the greater or less difficulty in swallowing. The sneezing is generally a mere precursory symptom, whilst the cough, which is at first generally slight, is often increased to a severe degree, showing the transition of the diseased action from one part of the mucous surface to another. In some cases these symptoms are much relieved on the appearance of the eruption, but in most of the severe forms of this disease it is otherwise, and the vulgar opinion that the greatest danger is to be apprehended as late as the decline of the eruption, or as is usually expressed *at the turn*, seems not without foundation. If the disease have proceeded thus far without appropriate treatment—if there be much dyspnœa, and the cough be frequent and severe—if the breathing, besides being oppressed, be much increased in frequency beyond the natural standard, the result is indeed much to be feared."—*Med. Intell. Vol I. p.* 197.

Mr. Alcock thinks that, during the progress of measles, we may as certainly infer the state of the lining membrane of the lungs, by a careful inspection of the fauces and adjacent parts, as we may infer the state of the stomach from that of the tongue.

"Examinations of morbid appearances, after death, in cases of measles, have shown the lining membrane of the air passages in a highly vascular and inflamed state; the air passages themselves filled in so large a proportion with mucus, as to prevent the oxydation of the blood, and consequently to destroy life. In cases where the disease has been more protracted, the air passages have not been filled with mucus, but chiefly with pus, sometimes mixed with air and mucus, extending throughout the most minute ramifications of the bronchia, and rendering a great part of the lungs much more dense than in the natural state.—*Med. Intell. p.* 197.

The parenchymatous structure of the lungs did not appear to suffer much, in Mr. Alcock's experience; but he has known more than one instance where ulceration of the larynx had taken place. During the period of eruption he not unfrequently found the larynx and pharynx principally affected, while in the more advanced stages, the trachea, and still more frequently, the bronchia became the chief seat of disease. Mr. A. observes, that the greater number of these affections are acute, and require speedy and efficient means of relief; whereas, inflammations of the same tissues, unconnected with these eruptive complaints, often continue for a considerable time without danger. Mr. Alcock, throwing all idea of the specific nature of measles (and indeed of other eruptive diseases) out of the question, and viewing the malady simply as inflammation of the mucous membrane of the lungs, founds his treatment, first, on the controlling of the general excitement; and secondly, on subduing the local inflammation. The means of

fulfilling these indications need not be stated to the readers of this journal.

In respect to small pox, as was observed above, Mr. Alcock found the aerial much more frequently affected than the alimentary passages; and he states it as a general fact "that the danger of small-pox has always been in the ratio of the laryngeal, tracheal, and bronchial inflammation, and that this inflammation has usually born a strict relation to the apthous eruptions which are to be found in the throat."* A reference therefore to the state of the throat, in the early days of the eruption, has proved an almost unerring guide to Mr. Alcock, in his future practice. "In nearly all cases of confluent small-pox, when seen thus early, a decidedly depletory and antiphlogistic system of treatment has conquered the disease, and saved the person's life."

"So certainly has this treatment answered the intended purpose, that in many cases the disease has been cut short, the eruptions have run through their course more rapidly than under ordinary circumstances, the secondary fever, as it has been called, has not occurred, and the person's countenance has been left free from pits, or the marks have been comparatively slight." *Med. Intell. p.* 201.

Dr. Hastings, of Worcester, whose work will presently come into particular consideration, relates two cases of fatal variola, where the mucous membrane of the lungs was inflamed or ulcerated. In the first case, (p. 238) a child, three years of age, after exposure to the contagion of small-pox, became feverish on the 14th of November. On the 17th a red pimply eruption appeared on several parts of the body. On the 19th there was some difficulty of breathing, which next day, was increased, and he died the same evening. On dissection, the mucous membrane of the pharynx was found inflamed; while the trachea, bronchia, and air cells were quite filled with mucous and bloody serum. The membrane lining the trachea and bronchia was

* Very many years ago Reil came to nearly the same conclusions. "Sur quinze ouvertures de sujets qui avaient succombé a variole Reil a trouvé onze cas où les bronches étaient attaquées de phlegmasie, soit seules, soit conjointement avec le larynx, la trachée on le poumon; et tantot elles contenaient un mucus de couleur pourpre foncée ou du sang aqueux, ou une matière epaisse, fètide et noirâtre; tantot leur glandes étaient tres gonflées quelquefois ces tuyaux ne presentaient qu'une legere phlogose avec des taches rouges; d'autres fois une fausse membrane plus on moins epaisse, blanchatre et tenace, recouvrait la tunique interne du tube aerien très inflammée." *Dict. des Sciences Med. Vol.* II. *p.* 130. We cannot lay claim to any great novelty in our mucological doctrines of the present day, after the passages quoted in this article are fairly considered.

greatly inflamed; but the substance and pleural covering of the lungs were sound.

The brother of the foregoing, six years of age, was seized with variola, which proved fatal on the 6th day, and without any very evident pectoral symptoms. He complained, however, of soreness of the throat, and some fits of dypnœa. On dissection, the pharynx and upper part of the glottis were found sphacelated. A quantity of bloody matter escaped from the trachea when incised. The mucous lining of the trachea and air-cells was much inflamed; and about the middle of the trachea there were several small ulcers. The bronchia and air-cells were completely full of a bloody fluid.

"It is common," says Dr. Hastings, "if death happen at an early stage, before the vescicles are formed, to find the trachea full of fluid, and the mucous membrane of the lungs exceedingly red from the dilatation of its capillary vessels. The glottis too, and the upper part of the trachea, are sometimes highly vascular, and the inflammatory action often extends to the pharynx; but neither the pleura nor the substance of the lungs appears inflamed. If the patient die at the later period of the disease, when the body is covered with pustules, ulcers are occasionally met with in the mucous membrane, corresponding in size with the pustules that are formed in the skin. The glottis and pharynx are still more affected than when the patient dies earlier, sphacelus of those parts occasionally occurring. The structure of the lungs is often entirely free from disease, and there are no adhesions. The lungs, however, do not collapse when the thorax is opened, and when cut into, a frothy matter escapes from them. The blood vessels of the lungs are always much loaded." 185.

Mr. Cross and Mr. Hull, of Norwich, have also stated some dissections after small pox, where an eruption of a variolous appearance was found on the inner surface of the stomach, as the reader will see in our last number, page 305.

In respect to hooping cough, little doubt is now entertained of its being a specific inflammation, more or less acute, of the pulmonary mucous membranes—especially that portion lining the larynx.

"I have repeatedly ascertained," says Mr. Alcock, "by dissections of patients who have died of hooping cough, that the larynx invariably exhibited signs of inflammation often to so great an extent as by its swelling to close mechanically the glottis; often the exudation of coagulated lymph near the larynx; the mucous or lining membrane of the trachea and bronchia much increased in vascularity, and the cavities of the latter filled with fluid more or less mixed with air—the fluid varying from that of thin mucus to perfectly formed pus.

"With these facts as a basis, is it unreasonable to suppose that the inflammation of the mucous membrane lining the various parts of the organs of respiration, should produce the tenacious mucus, which is

from time to time expectorated? that the accumulation of this matter impedes respiration, and acts as an extraneous body upon the larynx; that the cough is a mere natural effort to expel the offending matter, and its violence is in direct ratio with the tenacity of the phlegm secreted; as we often find that spontaneous vomiting frequently terminates the paroxysm, by bringing away the secretion adhering about the top of the larynx, and which the cough had not been sufficient to dislodge? This irritating cause being removed, there is soon a cessation of all the urgent symptoms until its accumulation, or other accidental cause, produces the recurrence of the paroxysm. If the disease be not subdued, either by natural means or by appropriate remedial treatment, the excessive secretion continues, accumulation takes place in the bronchia and in the air-cells of the lungs, and consequently the blood is prevented from that intimate contact with the air respired, which is so essential to life, that the continuance of this state terminates in suffocation."—*Med. Intell. p.* 202.

The treatment, Mr. Alcock observes, must not be confined to the mere alleviation of symptoms, but must, to be successful, strike at the cause. When the inflammatory affection appears to call for measures beyond those of regimen, temperature, &c. "depletion, active depletion must be used; and frequently the combination of blood-letting, both general and local, will afford more relief than either of them separately." These means will be greatly assisted by such remedies as tend to equalize the circulation; the distribution of blood being generally in excess in the internal organs, and deficient on the surface. The occasional exhibition of emetics is therefore useful, "and still more particularly such medicines as produce a copious mucous secretion from any large surface of the mucous membranes, as those of the stomach and intestines."

Dr. Richard Harrison, in a late Gulstonian Lecture before the college of physicians, subsequently published in the Medical and Physical Journal, has drawn the attention of his brethren to the connexion between the eruptive fevers, and inflammation of the mucous membranes. While ingeniously supporting this doctrine, however, he has gone a step beyond Broussais himself, by supposing "that it is irritation of *one organ solely* that will produce this effect, (fever) and that organ is the mucous membrane." This is denying the power of any other inflamed organ; as, for instance, the brain, to produce symptomatic fever, until the disorder has reached the mucous membranes, when "derangement of certain functions of the body," hitherto denominated fever, becomes immediately developed. It is somewhat mortifying to human, and particularly to medical speculations, that two learned and ingenious physicians, in the present advanced æra of pathology, should, in the British capital, promulgate two theories re-

specting fever—one maintaining that it depended *always* on inflammation of the brain—the other, that it *never had* such a source. Our own observations do not lead us to coincide entirely with either Dr. Clutterbuck or Dr. Harrison The etiology of fever is too various to admit an unvarying pathology of the disease. Truth would appear to lie between these exclusive extremes; for, granting that fever was always dependant on topical inflammation, that topical inflammation will not be found exclusively confined to a single organ or structure in the body.* Nevertheless the public are greatly indebted to those gentlemen who have endeavoured to assign fever a local habitation, since the doctrine points to by far the best practice in the majority of cases. If we could bring ourselves to the doctrine of an *exclusive seat* of fever, we should certainly be inclined to consider the mucous membranes as that seat, for it appears far more generally affected than any other tissue in the body; but we are not converts to the doctrine, notwithstanding the ingenuity and acuteness of its advocates.

As far as respects the eruptive fevers, however, we are strongly disposed to agree with Dr. Harrison and those other practitioners already alluded to, that the primary exciting cause, be it a specific contagious miasm, or certain unknown peculiarities of atmosphere, is first applied to the mucous membranes of the lungs and primæ viæ, and that in the said tissues we have the first indications of disordered function, during life, and very unequivocal vestiges of inflammation, on dissection.

"In fact," says Dr. Hastings, "the membrane (in measles) is sometimes affected in patches nearly approaching to the figure of semi-circles, in the same manner as the skin is in that disease." 193.

Under such circumstances, and knowing as we do, how commonly a disordered state of the internal secretions will affect the skin, we may fairly conclude that the febrific miasms which occasion the eruptive fevers take the route above mentioned in their action on the human frame. But although we conceive that inflammation is the danger to be guarded against, and the point to be held in view, while treating the eruptive fevers; yet we cannot bring ourselves to agree entirely with those who would identify *this* inflammation, as far as treatment is concerned, with inflammation occurring under common circumstances, and independent of any eruptive disease. It is quite evident that in the exanthemata Nature expels the poison, or, at all events, produces a metastasis

* Med. and Phys. Journal, July 1820, p. 17.

to the skin—and this she does not appear to attempt in *common* inflammations. Some little deference then, we conceive, is to be paid to Nature in this specific operation, and her work should not be rashly interfered with, until she appears to be going wrong. We find that, under common and favourable circumstances, Nature conquers the internal inflammation in her own way; we think therefore that it is only where the interior functions labour, and the internal structures are threatened with disorganizing inflammation, that we are to act as boldly as in the common phlegmasiæ of the internal organs. In the latter case, we are convinced that nothing but pure antiphlogistic measures can be effectual, and those put in force with vigour, not timidity.

Having thus glanced at the pathology of the mucous membranes in the exanthemata, we shall proceed to that of the lungs, as more commonly and obviously affected under other circumstances.

The respiratory organ is more exposed to external impressions, especially of climate, than any other viscus in the body; and its lining or mucous membrane, which is the most sensible structure of this complicated apparatus, is evidently the first surface on which these impressions can be made. It is to be borne in mind that whatever raises the sensibility or irritability of the mucous membrane of the lungs (or indeed of any other tissue) beyond the natural standard, augments proportionally the vascular fulness of the part; and, on the other hand, whatever determines an overplus of blood to this membrane, elevates its sensibility beyond the healthy boundary. Now in variable climates particularly these oscillations in the circulation and excitement of the mucous membrane are almost hourly produced. All irritating substances diffused in the atmosphere and drawn into the lungs, excite the nerves of their lining membrane; and this excitement draws an afflux of blood to the part—while every considerable alternation of temperature in the air, impels from the surface of the body an increased quantum of blood to the interior organs generally, but especially to the mucous membrane of the lungs, accompanied, or quickly followed, by a corresponding afflux of sensibility. This is no imaginary doctrine. Common observation pointed it out among the snow-covered mountains of Styria, when the legions of Napoleon were overrunning the continent.

" Toutes les fois," says Broussais, " que la température de l'air ou de l'eau vient à diminuer autour de l'homme, qui, d'ordinaire, baigne dans ces fluides, la peau se refroidit, ses évacuations cutanées diminuent, le sang est en moindre quantité dans l'organe cutané, dans le tissu cellulaire et dans les membres; il abonde dans la muqueuse pulmonaire, ce

qui est démontré par un sentiment de plénitude qu'on éprouve en inspirant, dans la poitrine; l'exhalation et la sécrétion muqueuse y sont augmentées. Si, après la cessation de la cause, l'équilibre n'est pas rétabli, l'homme a une irritation morbifique dans la membrane des bronches."
Tom. I. p. 140.

In the various avocations of life there are numerous other auxillary causes in the production of these irregularities of the circulation and excitement in the pulmonary apparatus. Inordinate exertions of the body or of the voice continually strain the vessels of the lungs; and, where any predisposition exists, excite a tendency to inflammation or congestion. And this leads to inquire what are the symptoms of this inflammation? Are we to consider every excitement of the mucous membrane of the lungs, as evinced by an increased secretion from its glands, as inflammation? Or, would it not be more correct pathology to consider *irritation* as the first link or grade, which may or may not rise into actual inflammation of the mucous structure? Volatile alkali or snuff will excite a considerable secretion from the mucous membrane of the nares, and upper portions of the larynx and fauces, with sneezing or coughing; but are we justified in calling this inflammation? Fruit and various other ingesta will often so excite the mucous membrane of the bowels as to occasion a smart diarrhœa, but is this inflammation? We think the following sentence of Broussais is worth attending to:—

" If this irritation exhibits no other indication of its existence than a disordered mucous secretion (un vice de la secretion muqueuse) it is called *catarrh;* but if it manifests itself by a violent disturbance of the circulation, joined to an alteration in the mucous secretion, we call it pulmonic inflammation.—*Tom. I. p.* 140.

This is probably all the distinction which we at present possess, between irritated function and inflamed structure. We are carefully to bear in mind, however, that inflammation almost invariably commences with irritation of function; and that irritation of function readily passes into inflammation or other disorder of structure.

We now come to the subject of Bronchitis, and here we take up the work of Dr. Charles Hastings, a gentleman whose zeal and talents will, we venture to prognosticate, do honour to the present æra of pathological investigation, and contribute greatly to the progress of the healing art.

Dr. Hastings has presented to the reader a concise yet clear exposition of what has been written on the subject of bronchial inflammation, previously to his own time, on nearly the same plan

as Dr. Cooke has adopted on the subject of nervous diseases—a mode of proceeding in both cases, which we highly recommend to the attention of our brethren, as deserving their warmest patronage and support.

Dr. Hastings very properly divides bronchitis into two kinds, the acute and chronic, together with the varieties of each kind which present themselves in practice.

Symptomatology of Acute Bronchitis.

§ 1. Dr. Hastings considers catarrh as the lowest grade, or mildest form under which bronchial inflammation is observed. The symptoms of this affection are well known, as well as its salutary termination in a mild mucous expectoration, which relieves the turgescence of the vessels, and permits the membrane to regain its pristine integrity of function. It is not very uncommon, however, for highly inflammatory symptoms to supervene on catarrh, occasionally, or the disease to degenerate into an obstinate chronic affection, in delicate constitutions, and under mismanagement or neglect. The cough then becomes severe, the expectoration copious and puruloid if not purulent, the dyspnœa considerable, the pulse quick, while the patient emaciates and exhibits most of the phenomena of phthisis, which, if not checked, prove fatal.

On dissection, in such cases, according to Dr. Hastings, tubercles are generally found in the lungs, and the mucous membrane much diseased, viz. ulcerated, and the bronchia and air cells filled with purulent matter.

§ II. The second variety happens generally during sudden atmospherical vicissitudes, in old people and phlegmatic habits. The apparent mildness of the attack is fallacious; the febrile symptoms are not near so strongly marked as in pneumonia; there is little or no fixed pain in the chest, but only a sense of uneasiness and tightness; there is oppression at the præcordia, with anxiety in the countenance, lassitude over the body, quick and laborious respiration, wheezing, and, as the disease advances, a noisy breathing, from the accumulation of the secretions in the air cells and bronchia. Hoarseness is common; and the patient cannot breathe deeply without exciting cough, or increasing pain, if any existed. In the early period of the disease, the dyspnœa is not much aggravated by the recumbent posture; but as it advances, the respiration is freer in the erect position of the body. Dr. Badham remarks, that in some cases of asthenic bronchitis,

there are periodical exacerbations of the dyspnœa, resembling transitory fits of asthma, with sudden constriction across the thorax, and momentary loss of voice. At the very beginning, there is often a dryness of the mucous membrane, the secretions being diminished; but cough is always present, and some expectoration usually attends the progress of the complaint. When a copious expectoration comes on of thick, viscid, opaque mucus, the violence of the cough is generally diminished. Vomiting not unfrequently is excited by the cough in bronchitis, and the discharge of dense white mucus, sometimes moulded into ramifications, usually relieves the bronchia for time. After violent paroxysms of coughing, the patient is often left breathless, with a sensation of tightness across the chest. Great pain across the forehead generally accompanies the cough—often vertigo and drowsiness. The tongue and stomach are deranged, and there is thirst. At the very beginning the circulation is not much disturbed; but in the progress of the disease, the fulness and hardness of the pulse are perceptible. The temperature of the body is not, in general, much increased, though the cheeks are often flushed, with evening paroxysms of heat and restlessness. The surface is dry, unless when acted on by diaphoretics, and blood drawn usually shows the buffy coat. The duration of this species of bronchitis is very uncertain.

"In some cases," says Dr. Hastings, "it terminates in a few days, whilst in others it runs on to a much longer period. In the more violent examples, when the remedies employed do not check the progress of the symptoms, the pulse towards the seventh or eighth day becomes very quick and much weaker; occasional perspirations break out, the nails and lips assume a slightly livid hue, and the countenance is distressed, anxious, and pallid, with somewhat of a purple tinge. In fact, every symptom bespeaks obstruction in the air passages. Soon after the extremities grow cold, and the patient dies from suffocation." 163.

In less dangerous cases the more distressing symptoms begin to subside in six or seven days, with a copious, bland expectoration, which generally continues for some time, and prevents the patient from recovering his health for several weeks. In this state unfavourable weather may fix a chronic and obstinate affection of the mucous membrane, which occasionally destroys the patient with all the symptoms of phthisis, but without disorganization of the parenchymatous structure of the lungs, as will be shown hereafter. Hydrothorax is not a very unfrequent termination of this complaint when long protracted.

§ III. Hitherto our judicious author has been considering the

disease as of a comparatively mild, catarrhal nature, or in old and phlegmatic subjects, where the pyrexia does not run high, and the disease is not very rapid in its course. But when the subject is strong and plethoric, the symptoms assume a tone of great severity. While the pulse, tongue, and surface indicate violent reaction, the countenance is often pallid. Even here there is rarely any fixed pain, but only a distressing tightness in the chest. The breathing is laborious, and only mitigated by the erect posture. The dyspnœa is far greater than the cough. There is some expectoration; a failure of which is a most unfavourable symptom. This stage of excitement, if not relieved, almost always terminates in a corresponding collapse of the system; when we have orthopnœa, purple lips, sunken and quick pulse, diminished temperature of surface, cold perspiration. The expectoration now becomes scanty, or ceases altogether, and the patient dies suffocated by the accumulation of secretions in the air cells and passages, often as early as the 5th or 6th day.

Vigorous measures at the beginning occasionally check the dangerous symptoms; but the great debility necessarily induced renders recovery slow, and a tedious chronic disease too often ensues, characterized by frequent and violent cough, with a very copious expectoration of puruloid matter, and, in fact, all the symptoms of pulmonary phthisis, sometimes terminating favourably, when aided by climate or season; often carrying the patient off in a state of marasmus and hectic fever.

§ IV. Young children are subject to acute bronchial attacks more speedily fatal, though not apparently so severe or dangerous as the last described variety. It is most common in the spring, commencing with, and retaining the catarrhal character. The breathing is somewhat quickened, with wheezing, but not much dyspnœa, nor uneasiness from supination. The cough is slight, and there is but little expectoration, except when vomiting is induced. The appetite is generally preserved, and the fever is moderate, but the pallor of countenance is remarkable from the beginning, with frequent, and sometimes hard pulse. In the progress of the disease the breathing becomes very variable—sometimes quite free; sometimes threatening immediate suffocation. These remissions and exacerbations, Dr. Hastings remarks, continue throughout the disease, the state of the circulation varying with, and apparently depending on, that of the respiration.

"The disease is not stationary, the symptoms soon become more distressing. The aggravations of the difficulty of breathing are more alarming, and the remissions less perfect. The child often falls into a

comatose state. A slightly livid tinge makes its appearance on the lips, from which the pallid cheeks are not entirely free. Even at this late period gleams of hope sometimes burst upon us. For a short time the difficulty of breathing may seem to subside, and the child to be better. But these hopes are never realized; even the next exacerbation of the symptoms may terminate in suffocation." 170.

In urgent cases the disease runs its course in about 72 hours; in the more protracted instances it usually terminates in less than five or six days.

§ V. In this section our intelligent and observant author traces the connexion of bronchitis with cutaneous diseases; but this subject was discussed at the commencement of this paper, and need not be entered upon here.

§ VI. In the sixth section Dr. Hastings takes up complications of bronchitis with diseases of the abdominal viscera. This combination, he observes, is frequently seen in the second variety (§ II.) of bronchitis, arising, as it often does, in habits deteriorated by intemperance.

"In these cases," says Dr. H. "a disease of the liver is brought on, which, by the irritation it produces in the mucous membrane of the lungs, often excites inflammation there. If this occur, we have, in addition to the pulmonic symptoms above described, the various symptoms indicating a languid hepatic affection." 177.

Here there is fulness with tenderness in the right hypochondrium, sense of oppression at the stomach, nausea, bitter taste in the mouth, giddiness or pain in the head, the fæces being generally dark-coloured and fetid. It is no uncommon occurrence for the more severe bronchial inflammations to be accompanied with symptoms of acute hepatitis, especially where the pulmonic affection has succeeded to measles. Gastric inflammation is occasionally combined with bronchitis, and then we have debility, pain in the stomach, increased by ingesta or pressure, together with the usual symptoms of gastritis. The same may be said where peritonitis occurs in combination with bronchial inflammation.

But Dr. Hastings thinks that inflammation of the larynx and upper part of the trachea is the disease most frequently found in conjunction with bronchitis.

"The symptoms," says Dr. Hastings, "which denote the first attack of chronic inflammation of the trachea, which is very insidious in its approach, are a tickling cough and tenderness in some part of the trachea, pressure generally producing a cough. The voice is always changed, the patient often speaking in hoarse whispers. The pulse is accelerated, fever for the most part attends, and a dense mucus is often expectorated.

"If the disease proceed to ulceration, the voice becomes more affected, the pulse is greatly accelerated, and the cough is harrassing, and attended with a copious purulent expectoration. The countenance expresses great anxiety, and the respiration is laborious; but no pain is felt in any part of the chest, though it is often referred to the epigastrium, when the dyspnœa has continued long." 179.

During this chronic disease, exposure to cold or other cause, may light up acute inflammation, which spreads along the whole of the mucous membrane, and then we have the symptoms of bronchitis mingled with those of chronic tracheal disease. We have then, superadded to the symptoms described above, a distressing straitness across the chest, a more aggravated dyspnœa, sometimes a slight lividity of the lips, and a more severe fever. If, by vigorous measures, the inflammation be checked, the original chronic affection of the trachea either goes on slowly to fatal disorganization, or yields, though seldom, to a long course of medicine.

Tumours, as bronchocele, occasionally by pressure on the windpipe involve the whole mucous membrane of the lungs in inflammation. It must also be candidly confessed that the features of bronchitis, especially when the disease is combined with other affections, are many times so faintly or obscurely marked, that it is with difficulty, or not at all, we are able to recognize them.

"Sometimes it is complicated," says our intelligent author, "with a multitude of other phenomena. Sometimes its commencement is imperceptible, its progress insidious and obscure, and its termination slow. Sometimes scarcely any of the symptoms of bronchitis appear; the patient is visibly affected with some other disease, which seems to prove fatal; and the inflammation of the bronchia is not discovered till after death. Sometimes its abrupt attack, its rapid course, and its combination with inflammation of the lungs, pleura, pericardium, or heart, do not allow us, with any degree of certainty, to fix the character or seat of the affection." 182.

Appearances on Dissection. These, of course, are various, according to the different forms of the disease. In the more acute cases, the lungs do not collapse on opening the thorax, although the parenchymatous structure be sound. On slitting open the trachea "it is often found full of fluid, (says Dr. H.) which is sometimes purulent, and at others consists of serous matter, with which coagulable lymph or mucus is generally mixed. The bronchia are, for the most part, plugged up with purulent matter, or tenacious mucus, or bloody serum." 182. When the substance of the lung is cut into, a frothy fluid escapes. In a few instances, Dr. H. observes, no fluid was found in the air passages, but only

inflammation of the mucous membrane, which is always present. The capillary vessels of this tissue are invariably red and dilated; sometimes so much so, that this membrane "appears like a congeries of blood vessels." When the disease is less rapid in its progress, the whole of the mucous membrane is not always inflamed. Patches of inflammation are surrounded by portions of sound membrane, while a considerable quantity of serous fluid occupies the air cells. This is particularly the case in those who die of rubeola; but, "when bronchitis (says our author) succeeds to pustular cutaneous diseases, the mucous membrane is sometimes affected with minute ulcerations, and the whole of its texture appears much redder than natural." It is not to be supposed that even in acute bronchitis the inflammation is always bounded by the mucous membrane. The structure of the lungs is sometimes affected. They are either reddened, hardened, suppurated, or tuberculated. This is still more the case in chronic bronchitis, as we shall see farther on. The pleura too is not unfrequently inflamed, exhibiting, *post mortem*, a whitish incrustation, or an effusion into the cavities of the chest. The heart and its envelopes occasionally participate in the inflammation. "The membrane lining its cavities is more particularly the seat of inflammatory action. Coagulable lymph is occasionally found on the auriculo-ventricular valves The cavities of the right side of the heart are, for most part, larger, and contain more blood than usual." *Hastings*, p. 186. The stomach is sometimes found inflamed, and even ulcerated;—the liver in some cases indurated—of a lighter colour than natural, and enlarged, or its peritonæl coat inflamed and thickened.

"Every part of the peritonæum is now and then in a morbid state. Its whole surface is granulated; the intestines are united together and covered with a white incrustation; and a milky puriform fluid is contained in the cavity of the abdomen.

In a section on the *nature* of the foregoing affections, Dr. Hastings makes many reflections and observations which evince the soundness of his judgment—the best attribute of a physician. Dr. H. dissents from Dr. Badham, (whose work, by the bye, is a very valuable one, though too much overlooked by the profession at present) respecting the cause of the *wheezing* in bronchitis. Dr. B. attributed it to a certain constricted state of the inflamed parts, rather than to a redundant secretion of mucus. Dr H. takes the contrary side of the question; attributing not only the wheezing, but the occasional exacerbations of dyspnœa, to the mechanical interruption which respiration experiences from redundant secre-

tions in the air passages. Were we permitted to offer an opinion on the subject, we would say that the temporary exacerbations of dyspnœa were partly owing to the exuberant secretions, and partly to the difficult transmission of blood through the lungs when either their substance, coverings, or linings were inflamed. The dyspnœa, in what is termed spasmodic asthma, occurs long before the increased secretion of mucus, and, as Dr. Bree, in his excellent treatise on the subject, well explains, is owing to *irritation* in the lungs, whatever may be the cause of that irritation.* Now we all know, that wherever there is *irritation* there will be an increased *afflux of blood;* and the respiratory muscles being called into unusual exertion is the index of Nature's sufferings, and the effort she employs to obviate them, as Dr. Bree has long ago and ably explained. The head-ache in the second variety of bronchial inflammation is doubtless, in a great measure, owing to the "congestion of the blood-vessel of the lungs," which "necessarily interferes with the due return of blood from the head." The extreme debility attendant on acute bronchitis is readily accounted for by the state of the air-cells in the lungs, preventing the decarbonisation of the blood, and thus occasioning the lividity of the lips, and laborious respiration preceding the fatal termination This interruption in the pulmonary function on the blood must also affect the brain and nervous system, and thus the functions of the whole body are drawn into disorder.

Treatment of Acute Bronchitis. Broussais and Hastings exhibit the following concise view of the treatment in language so precisely similar that the English appears almost a literal translation of the French:—

Broussais. "Modérer l'effort du systéme sanguin, s'il est outré, par la saignée générale et locale, par les boissons mucilagineuses et aqueuses, un peu acidulées, et par l'abstinence des alimens: favoriser doucement la transpiration et diriger les mouvemens vers l'extérieur par les topiques émolliens, dans la violence de l'éréthisme, par les rubéfians et les vésicans, lorsque la réaction vasculaire et l'activité du systéme nerveux diminuent, telles sont les indications générales qui s'offrent à remplir dans le début des inflammations sanguines de l'organe pulmonaire." 148.

Hastings. "To moderate the excitement of the sanguiferous system—general blood-letting, acidulated mucilaginous drinks, and abstinence from all stimulating food. To promote expectoration and perspiration—antimonial and saline medicines. To direct the fluids towards the surface, and relieve the congestion of the debilitated capillaries—local blood letting, blisters, and rubefacients." 208.

* See the whole of section II. in Dr. Bree's work, where great erudition and judgment are combined to elucidate the subject.

Dr. Hastings observes, that although general blood-letting is by far the most powerful for diminishing the excitement of the system, yet it is not equally applicable to all the varieties of bronchitis. In the *first* variety, for instance (§ 1) it is seldom necessary to detract blood, unless the fever be considerable, when it may be done with safety. In the *second* variety, venesection is generally proper, though to be employed with caution, as Sydenham long ago observed.

"The abstraction of ten ounces of blood from the arm early in the disease, sometimes mitigates the symptoms, after which it is generally more safe to depend upon an attention to diet, proper expectorants, and local evacuations. The peculiar tendency to effusion often renders the treatment of this affection difficult, as we are sometimes deterred by this cause from pursuing the blood-letting when the inflammatory symptoms indicate its employment. In this event we must subdue the inflammation by those means which are least likely to bring on effusion." 209.

But as the *third* variety of bronchitis sometimes occurs in robust habits, occasioning violent symptoms, the short state of excitement quickly terminating in irremediable debility, so the small space of time allowed for antiphlogistic measures, must be seized, for the purpose of making a decided impression on the complaint. Here blood-letting should be boldly employed—from twenty to thirty ounces may be taken from the arm at the first venesection, unless symptoms of syncope supervene. Although few cases yield to one bleeding, yet the repetition must be determined by the symptoms of the disease, and by the strength of the patient.

When the disease attacks children, general blood letting, as far as the strength will permit, should be employed. And we may here observe that children, from a year upwards, may almost always be bled from the arm, although practitioners have a very general idea, that at such early periods we cannot procure blood from the brachial veins. Dr. Hastings thinks there is an advantage as well as facility in opening the external jugular veins of children—"as the blood is taken from a vessel which pours its contents into the thorax." But surely the brachial veins transmit their blood to the same point, and almost as directly as the jugulars. If children do not bear bleeding as well as adults, still, when life is menaced, we have no alternative—without detraction of blood there is no hope, and even that powerful measure does not always arrest the progress of the disease. In combinations of bronchitis with chronic ulceration of the trachea, the debility is so great, that bleeding, to any extent, is rarely admissible.

Vomiting has been recommended by many authors.

"The benefits," says Dr. Hastings, "which arise from emetics are two-fold: they unload the primæ viæ, thus removing causes of irritation; and they increase the expectoration, on which, as is above observed, the favourable issue of the case so much depends.

"Again, when the disease occurs in young children, emetics appear to be extremely serviceable, the stomach and bowels being generally in a bad state, and the bronchia loaded with redundant secretion." 212.

Our intelligent author justly observes, that the aqueous solution of tartarized antimony is, in general, the best medicine for producing these effects, excepting in young children, where ipecacuan is to be preferred. Antimony generally excites diaphoresis, and, in fact, opens most of the secretory vessels; thus reducing the whole mass of fluids, and consequently checking the inflammation of any structure. Dr. H. thinks they should be given in saline draughts, and that nitrate of potass should always be combined whenever there is much fever.

In the second variety of bronchitis some have recommended the more stimulating expectorants. They cannot, Dr. H. thinks, be proper where the heat is much increased.

"In the advanced stage, however, when the inflammation is nearly subdued, and the bronchia are clogged, ipecacuanha combined with squills is often of great service; but in all cases of this disease, as long as the excitement is considerable, if antimonial remedies be excepted, no expectorants are so useful as mucilaginous mixtures." 213.

Cathartics have not been considered beneficial in thoracic inflammations, as they were supposed to check expectoration. Our own experience has long ago taught us that, in common pulmonic inflammation they are exceedingly useful—anterior to the complete establishment of expectoration—that is, during the first days of the disease, as they not only powerfully deplete the whole system, but act by derivation from the pulmonary to the abdominal organs. When, however, Nature has fairly established expectoration, we hold it to be unsafe, because we have witnessed its bad effects, to act with any degree of force on the mucous surfaces of the bowels, since it very commonly interrupts the salutary discharge from the lining membrane of the lungs. If bleeding and purging are properly managed in the early stage of thoracic inflammation, there will rarely be profuse expectoration, and sometimes none at all. Dr. H. thinks there is less danger from purgatives in pectoral diseases than was once imagined, and directs that, in every variety of bronchitis, the bowels be kept lax, while at the commencement an active purgative should be administered to clear well the alimentary canal.

In the combination of bronchitis with abdominal disease, it is

evident that the free employment of cathartics is of the utmost importance; particularly where the liver is affected, and its secretions deranged. Here we must always have recourse to cooling and mercurial purgatives. "From small doses of the neutral salts, given so as to keep up a constant catharsis, the greatest benefits ensue." *Hastings.*

"Mercurials, exhibited so as to act upon the system, are not usually beneficial; nevertheless, when in the sixth variety the liver is evidently affected, small doses of blue pill may be given, so that the gums may become tender." 214.

When bronchitis is combined with inflammation of the trachea, (producing symptoms resembling croup) Dr. Hastings thinks that analogy would lead us to employ calomel in frequently repeated doses. In one case (14th) where bronchitis occurred in conjunction with *chronic* inflammation of the mucous membrane of the trachea, great advantage arose from calomel and antimonial powder.

"The voice had become very indistinct, and the quantity of sputa was considerable. The patient took eight grains of calomel every day for several weeks, and eventually recovered."* 215.

In bronchial inflammation, as long as there is much fever, Dr. Hastings thinks opium is prejudicial. "But when that declines, and irritability of the system and air-passages still prevails, it not unfrequently allays the cough, and calms the patient. But opiates must be employed with great caution, especially in the *second* variety; for when the secretion is copious, and the strength much reduced, they interrupt, for a time, the efforts to expectorate, and may thus prove fatal."

"In combination with small doses of calomel, opium may sometimes be exhibited at an earlier period of the disease. When conjoined, these remedies not only diminish the cough, and assist expectoration, but seem likewise to regulate the secretions throughout the system." 215.

In the *second* variety, especially when a disposition to effusion is manifested, mild diuretics are serviceable. But in all varieties of acute bronchitis, as Dr. Hastings justly observes, expectoration occasionally stops, apparently from want of power in the system; in which deplorable cases we must endeavour to support the

* In laryngeal inflammation of the *chronic* kind, we consider mercury a valuable auxillary to the regular depletory measures, and counter-irritants. We may refer for a good instance to Dr Hall's case of Laryngitis requiring laryngotomy, in the Medico-Chirurgical Transactions; or the second vol. of our *Quarterly Series*, *p.* 610.

strength and relieve the bronchia of the secretions with which they are clogged. Ammonia is a medicine the best calculated to effect the latter purpose, and in truth we have seen patients, as it were snatched from impending suffocation by this valuable medicine.

Dr. Hastings appears to have entirely overlooked the effects of a regulated temperature of the patient's atmosphere, while labouring under acute bronchitis. This we consider to be a defect in a systematic work, and Dr. Hastings will doubtless allude to it in a future edition, many of which will ultimately be called for. Broussais particularly alludes to the necessity of a regulated temperature in the sick man's chamber:—" par un appartement convenablement échauffé on donnera à l'atmosphère ambiante une température qui favorise les evacuations cutanées."* The same able physician directs our attention to warm clothing, and especially flannel next the skin, to keep up a moderate degree of excitement there. The French physician having seen so many catarrhal inflammations protracted into a dangerous chronic state, apparently, in some cases, from debility, is more disposed to give tonics and mild nourishing diet, as soon as the expectoration becomes white and thick, than British practitioners are inclined to do.

" Aussitôt que l'expectoration blanche et épaisse annonce la résolution ou l'excrétion qui se décharge dans les bronches, on combine les toniques aux émolliens, on permet les alimens, et l'on raméne peu à peu le malade à son genre de vie accoutumé." 148.

In these lingering inflammations between the acute and chronic states, Broussais administered diluted red wines, and the decoction of cinchona lowered with mucilage—a medicine which he found preferable to all other tonics. Where intermittent fever is combined with bronchial inflammation—no rare case among soldiers in unhealthy situations—the combination is very difficult to manage; for if the fever continues, the bronchitis is aggravated by the cold fits determining the circulation to the interior organs, while bark or other tonics given to stop the ague, have generally the effect of heightening the local inflammation in the mucous membrane of the chest. In such circumstances, Broussais thinks it is more dangerous to exhibit stimulating febrifuges than to allow the intermittent to take its course for some time till the bronchitis is reduced.

But to come to the local means of cure. Topical blood-letting and blisters are of most importance in acute bronchitis. As gene-

* Tom. I. p. 149.

ral bleeding diminishes the excitement of the heart and larger vessels, so local detractions relieve the weakened and dilated capillaries—hence much advantage is derived from combining both measures. "Whenever, therefore," says Dr. Hastings, "in bronchitis the symptoms require general blood-letting to be repeated, we should also have recourse to local evacuation." Blisters, our author observes, should not be applied "till the excitement has been considerably relieved by blood letting." But when bronchitis occurs in phlegmatic habits, and assumes the form of peripneumonia notha, blistering may be employed from the beginning, and is one of the principal remedies to be relied on in that variety of the disease. In obstinate cases the blisters should be large, so as to cover the whole anterior part of the chest, and the surfaces kept open, or new ones applied.

The tepid bath together with local fomentations or cataplasms, may also be used to remove the tension of the surface and excite diaphoresis. For the debility which almost always succeeds attacks of this disease, "nothing," says Dr. Hastings, "is more appropriate than a light nourishing diet with change of air." 218.

From page 218 to page 263 of Dr. Hastings's work, nineteen interesting cases of bronchitis are faithfully detailed, and very satisfactorily illustrate the principles and practice of which we have endeavoured to present an analysis to our readers. This part of the work we recommend to the *study*, not merely to the *perusal*, of our brethren, as containing a series of important and authentic documents which deserve their most serious attention.

Chronic Bronchitis. This disease, as Dr. Hastings truly remarks, embraces a wider field of investigation than we should have, at first sight, supposed. It is so often complicated with other affections, and so frequently gives origin to the most fatal disorganizations in the thoracic viscera, that it is entitled to a more rigid inquiry than it has hitherto obtained in this country at least.

Dr. Hastings divides chronic bronchitis, as he has done the acute, into several varieties—rather too many indeed, we think, for common practical purposes.

1. The first variety may be considered as the sequela of the acute form in old persons, attacking the patient generally at the commencement of cold weather, and lasting through the winter. The irritable mucuos membrane is sensible to every atmospheric vicissitude—the respiration is uneasy, with occasional wheezing—the fits of coughing are most violent in the morning—the expecto-

ration is copious, consisting of tenacious muco-purulent fluid, sometimes white and frothy. None, or only transient pains are felt in the chest—there are generally signs of disorder in the digestive organs, with sense of weight or pain in the epigastrium, white or loaded tongue, loss of appetite, quickened pulse, high-coloured or scanty urine, irregular bowels. Occasionally, however, chronic bronchitis exists for a long time without much constitutional ailment, or febrile action. This variety of the disease sometimes lays the foundation for hydrothorax, but more commonly subsides as summer advances.

2. The second variety resembles tubercular phthisis. The cough is severe, especially on lying down and getting up—the expectoration copious and part of it lumpy, varying in size from that of a pea to that of a bean, which lumps sink in water, and refuse to mingle therewith, being viscid, sometimes translucent, sometimes opaque. With this expectoration there is often a flaky substance, not unlike the ramifications of the bronchia, which floats on the surface of the water. To these, Dr. Hastings remarks, there is usually added a third kind of matter, of a white, yellow, or greenish colour, which sinks in water, but by agitation may be broken into ragged portions, and somewhat diffused therewith. Lastly, some blood is often expectorated. The breathing is quickened, and often laborious, with a sense of oppression and tightness across the chest, although a full inspiration can be taken without pain. In bed in the morning the pulse seldom rises above 90; but when the patient sits up, the pulse is generally from 100 to 110, with an evening augmentation to 120. The temperature of the surface is pretty steadily above par, with a dryness and occasional roughness.

"In the night partial perspirations break out, which more especially appear about the head and breast. The desire for drink is always greater than in health. The urine is constantly high-coloured and deposits a copious red sediment. The face is often pallid, but there is sometimes a flush on the cheek, which more frequently appears during the evening febrile exacerbation. At the same time that the symptoms above enumerated occur, the patient visibly loses flesh and strength, and becomes more unequal to every kind of exertion." 268.

If the disease be not checked, a more alarming train of symptoms soon supervene. The debility and emaciation advance; the cough and expectoration increase—the latter sometimes to a pint or a pint and a half in the night—principally of a yellow or greenish colour, sinking in water, and diffusible, by agitation, therein. The dyspnœa is now distressing, as is the sense of tightness and weight across the chest, rendering the patient breathless on the

slightest exertion. The pulse is now seldom under 120, and in the evening it is more. "The tongue becomes cleaner, and, in many cases, all fur is removed: it assumes a shining appearance, and is redder than in health." There is nocturnal perspiration, leaving the patient much exhausted. "The body," says Dr. Hastings, "is inclined to constipation early in the disease; but, as the aggravated symptoms advance, a diarrhœa comes on, and, under these accumulated ills, the patient at length dies with all the appearance of tubercular phthisis" 270. Under proper management the second, phthisical stage may often be prevented. In the advanced stage it not only resembles phthisis in appearance but in fatality.

The 3rd variety which our author describes, we shall pass over, as we really do not think it likely that it will often be distinguished in practice from the foregoing. Here, indeed, we conceive Dr. Hastings has refined with unnecessary minuteness—a thing that ought to be guarded against in all practical illustrations of disease. We shall also pass over the 4th variety of chronic bronchitis succeeding cutaneous eruptions; and the 5th, resulting from irritating substances acting on the mucous membrane, as in the cases of stone cutting and other unhealthy occupations, where hemoptysis is commonly produced; and where the disease disappears if the cause is removed, referring to the work itself for a more particular detail, in order that we may occupy more space with that variety of chronic bronchitis connected with diseases of the abdominal viscera.

6. One of the most common of these attendants of bronchitis is a chronic disease of the liver, of which our most intelligent author has introduced five interesting examples.

"It very often happens," says Dr. Hastings, "that in the commencement of this modification of the disorder we have no symptoms which can lead us to suspect any pulmonic affection. They are altogether such as are usually produced by hepatic disease. We have pain in the right hypochondrium, inability to lie on the left side, irregularity of the bowels, loaded tongue, and depression of spirits. The first warnings of disease in the bronchial membrane are very slight. There is a dry cough, unattended with any pain, which is often considered the necessary attendant on hepatic affection. By degrees the cough becomes more troublesome, and when it continues for some time, a tenacious mucus is expectorated. The breathing, too, is in some degree affected, and the patient complains of a weight and tightness across the chest. As the disease advances the cough is more troublesome, and the expectoration becomes copious: still, however, we do not trace much of the purulent character in the matter expectorated; it is principally mucus. The expectoration, however, in a more advanced stage, increases in an astonishing manner, and at length becomes purulent. Blood is not unfrequently mixed with the colourless matter, and sometimes pure

blood is coughed up in the early stage of the disease; but in the cases of this kind which have been seen by the author, it is not a common occurrence." 277.

In these cases there is often a dull kind of pain, and always a tenderness in the epigastric region; and in progress of time, an irregular hectic is formed, differing, Dr. H. thinks, considerably from the true tubercular hectic.

"It is true there is usually some evening exacerbation, during which the face is generally flushed. The hands and face, also, are occasionally bedewed with perspiration in the night; but this, for the most part, goes off before morning. The emaciation becomes very perceptible, though it does not proceed so rapidly as in tubercular phthisis." 277.

With the above, the disorder of the digestive organs is well marked by flatulence, irregularity of bowels, furred tongue, impaired appetite, sense of fulness in epigastrio, "the dyspnœa and cough being always worse when the digestive organs are much oppressed." If the progress of the disorder be not checked, the symptoms approach still nearer to those of tubercular phthisis. Hectic fever becomes completely formed, and the patient is wasted with profuse perspirations, dropsical symptoms often preceding the fatal event.

Ulceration of the *stomach* occasionally is combined with chronic bronchitis; but here the emaciation is considerable *before* any marks of the pulmonic irritation are developed. Gastric symptoms also precede the thoracic affection. It is well known that symptoms resembling tubercular phthisis occasionally supervene on disease of the mesenteric glands. In cases of this kind, Dr. Hastings thinks that accurate investigation will generally show that the pulmonary affection is confined to the mucous membrane lining the bronchia and air-cells.

Post Mortem Appearances. Non-collapse of the lungs, on opening the thorax, with discharge of frothy fluid when an incision is made into their parenchyma. The capillaries of the mucous membrane are always dilated—"in the most marked examples the membrane is throughout like a congeries of vessels, and very much resembles the villous coat of the stomach or bowels, when a fine red injection has passed into its minute vessels." *Hastings.*

This injected state of the capillaries is sometimes only in patches, the intermediate spaces being nearly natural. The bronchial membrane is usually thickened, "and not unfrequently its surface is pulpy." It was not uncommon for Dr. Hastings to find this membrane ulcerated, especially where the irritation was

caused by mechanical substances. The bronchia and air-cells are almost always filled with a purulent or muco-purulent fluid, mixed with bloody serum, and a frothy substance. When the disease extends beyond the mucous membrane, "the most common deviation from a natural state, (says Dr. Hastings) is a certain degree of thickening of the substance of the lungs, from which they become more solid." Tubercles are sometimes found in the lungs, when the mucous membrane is inflamed—they are sometimes in an incipient, sometimes a suppurated state. The pleura is often diseased. "Adhesions take place, and not unfrequently the whole of the serous membrane is full of tubercles." The heart is sometimes organically disordered, particularly in its valvular structure; and where abdominal disease have preceded the pulmonic attack, the liver is usually found in fault.

"It is generally enlarged and hard, and sometimes exhibits that peculiar nutmeg appearance which is so common. Its peritonæal coat is often very much thickened, and occasionally tuberculated. In some examples tubercles are also found in the substance of the liver; but this does not frequently happen.

"When bronchial inflammation has succeeded to long continued abdominal inflammation, the peritonæum is usually much diseased, being closely adherent to the bowels and thickened. The whole of its reduplications on the viscera are sometimes thickly beset with tubercles of various sizes, some not exceeding a pin's head in magnitude, others as large as a pea. In some parts of the serous membrane, many of them being clustered together, give it a very unnatural appearance for a considerable extent. The intestines are all closely united together, and their peritonæal covering is apparently much inflamed.*

"The cavity of the abdomen generally contains a quantity of yellowish fluid, which has flakes of gelatinous matter swimming in it.

"The mesenteric glands are frequently found much enlarged, and occasionally suppurated." 284

Here ends the pathology of Dr. Hastings, with which intelligent author we have now, for some time, travelled in the strict analytical path, but from whom we must diverge for a moment to other sources of information on the subject under investigation.

Man, and the diseases by which he is assailed, are every where signally modified by the skies above him, the earth beneath him, and the host of moral aud physical agents around him. In all causes, therefore, it is beneficial to take a comprehensive view of things, to prevent what Celsus complained of two thousand years

* These appearances are similar to those so faithfully described by Dr. Baron in his work on "Tuberculated Accretions of Serous Membranes."

ago:—"ex quo incidit, ut alia atque alia summi auctores quasi *sola* (auxilia) vindicaverint, prout cuique cesserant."* In civil life, and in the bosom of peace, men are not exposed to such intense causes of disease, as in the tumults of war, and the enterprizes of emigration; or at least if they are exposed to them, they have multiplied resources and means of counteraction. The pathology of diseases therefore varies, under different circumstances, and would appear to lead to different conclusions. Thus in the campaigns of the French armies, on the Continent, Broussais found that the almost universal pathological character of chronic bronchitis, or catarrhal inflammation, was an *induration of the parenchymatous structure of the lungs*, produced, he thinks, principally, by repeated exposures of the soldiers to cold and wet, under states of debility and privation.

"This chronic induration," he observes, "steals on in the intervals of great constitutional movements, although slight causes of irritation will readily kindle up the original storms. After seven, twelve, or fourteen days of pyrexia, the circulation becomes calm, the heat natural, the appetite returns, the complexion freshens, and strength appears to be fast returning. There only remains a cough, which gives little trouble during the day, but experiences an exacerbation at night. Frequently the cough is dry and husky; sometimes accompanied by much expectoration. In this state the patient goes about his affairs for a fortnight or a month; but now, on reflection, he finds that he loses strength, instead of gaining it—that his breathing is very laborious on going up an ascent. His physician will perceive a slight acceleration of the pulse, and a flushing of the cheeks, in the evening—gradually the complexion becomes pale and sallow—the face becomes bloated—the legs edematous, and the strength fails. All these symptoms go on increasing, especially the cough, which renders the night most distressing. Still the patient never desponds: and as in approaching his final goal, he becomes incapable of taking either exercise or nourishment, he is nevertheless calm, and apparently free from sufferings. Finally, in two, three, or sometimes four months, he becomes anasarcous all at once, and dies suddenly."†

The organic alterations which M. Broussais found after death, in these cases, were—a reddening and induration of the parenchymatous substance of the lungs, so as to present the appearance and consistence of liver, in the centres of which indurated portions were sometimes observed certain softened and pasty points, as though the structure had putrefied. The mucous linings and pleural coverings were occasionally in a diseased state, with effusions or false membranes in the chest. This induration he con-

* Celsus, Lib. iii. cap. i.
† Phlegmasies Chroniques, Tom. I. p. 144.

sidered to be always the effect of an irritation, of longer or shorter duration.

"Ce point d'irritation a pris naissance dans les capillaires de la muqueuse. Nous avons observé que, né dans les capillaires de glandes muqueuses, le point d'irritation ne se que trop souvent propagé, d'abord dans toute la membrane, d'où il a, par suite, envahi le parenchyme. Arrivé a son dernier periode, il a transformé tout le poumon en une masse rouge, composée, autant que les sens peuvent nous en convaincre, de vaisseaux de toute espèce remplis d'un sang coagulé.—*ib.*

But to return to Dr. Hastings, under the head "Ratio Symptomatum of Chronic Bronchitis," our able and ingenious author makes many judicious observations, which our limits will not permit us to quote. The section on "Diagnosis," is also interesting, and this we cannot entirely pass over, without culling some valuable matter. The great object of diagnosis is between bronchitis and tubercular phthisis. But it is to be borne in mind that not only are these two affections extremely difficult of distinction in advanced stages, but they are often combined.

"Early in the disease, the abscence of pain during inspiration, the capability of resting on either side in bed, (when there is no abdominal disease,) the wheezing noise in respiration, the leaden colour of the lips, and the pallidity of the countenance, the appearance of the sputa, consisting almost entirely of mucus, occasionally streaked with blood, are symptoms sufficiently well marked to distinguish chronic inflammation of the bronchia from tubercular phthisis." 290.

When in an advanced stadia of the disease the symptoms usually indicative of tubercular consumption become intermingled with those of chronic bronchitis, "the peculiar pallidity of countenance still continues, and there is in the majority of cases no pain in the chest; or, if it come on, it is diffused over the whole chest. The dyspnœa is not so great as in tubercular phthisis, and the patient can take in a much larger volume of air into the lungs." These *plus* and *minus* distinctions we have always considered extremely unsatisfactory.

"The quantity of matter expectorated in this disease is much greater than in tubercular or apostematous consumption, except at the time a vomica gives way, when large quantities are brought up; but this excessive discharge does not continue long in the latter disease, whereas in chronic bronchitis we often see a pint or a pint and a half of matter expectorated during the night, and that for a long period together. We have not a short tickling cough in bronchitis; it is deep and sonorous. The paroxysms of hectic fever are much less regular in chronic bronchitis than in tubercular phthisis. The perspirations are partial, confined, perhaps, to the breast and upper extremities. The emaciation too is, generally speaking, less in inflammation of the mucous membrane

than in tubercular phthisis, though we do meet with cases in which the emaciation is as great in the former as in the latter affection. When the pulmonic symptoms have arisen from a diseased liver, it is a strong presumption that the seat of the disease is in the bronchial membrane; for in almost all cases of this description the mucous membrane is the part affected. When this combination occurs, the spirits are always depressed; and in addition to the usual pulmonic symptoms, we have in this form of the disease a painful and distended epigastrium, unnatural stools, and disordered digestion. The mouth is dry in a morning, and the tongue loaded. The fits of coughing are constantly excited when the stomach is overloaded, and are apt to come on when the patient is lying on either side in bed." 292.

Treatment. Broussais lays down two main indications in the cure of chronic inflammation of the mucous membrane of the lungs:—1st. to diminish the general excitability, and keep the circulation quiet; 2d. to draw the excitement and the fluids towards other organs, and particularly towards the skin. These we believe to be the grand objects to be kept in view. Of the means employed in the treatment of this complaint, Dr. Hastings observes that—"some act by directly enfeebling the force of the circulation; some moderate excitement by re-establishing the secretions throughout the system; others act on parts in the neighbourhood of that which is diseased; and a few are *directly* applied to the inflamed membrane." Both Broussais and Hastings give an unfavourable picture of the effects of *inhalation* of medicated liquids in diseases of the mucous membrane of the lungs; and were it necessary to strengthen such authorities, we could bring forward strong proofs, from our own personal observation, of the non-efficiency of these medicated local applications.

"Le seul corps étranger," says Broussais, "qu'on fasse parvenir dans les vésicules bronchiques, c'est l'eau en vapeur; mais il faut qu'elle soit chaude, et par sa temperature elle fait plus de mal qu'elle ne procure de soulagement par sa qualité relâchante. Je n'ai jamais vu résulter un grand avantage des fumigations. Tous ces moyens ne font que boursouffler la membrane, et augmenter le sentiment de plenitude et de compression pectorale."*

We think that M. Broussais has gone too far in condemning so decidedly the vapour of warm water as injurious in inflammation of the mucous membrane of the lungs, since we have seen considerable advantage derived from this measure; but we fear that what he says respecting medicated fumigations will be found too true. The vapour of tar is the only kind of inhalation which Dr. Hastings has tried.

"Not one instance has occurred in the author's practice of even temporary relief in tubercular consumption by the inhalation of this vapour:

* Broussais, Tom. I. p. 151.

sidered to be always the effect of an irritation, of longer or shorter duration.

"Ce point d'irritation a pris naissance dans les capillaires de la muqueuse. Nous avons observé que, né dans les capillaires de glandes muqueuses, le point d'irritation ne se que trop souvent propagé, d'abord dans toute la membrane, d'où il a, par suite, envahi le parenchyme. Arrivé a son dernier periode, il a transformé tout le poumon en une masse rouge, composée, autant que les sens peuvent nous en convaincre, de vaisseaux de toute espèce remplis d'un sang coagulé.—*ib.*

But to return to Dr. Hastings, under the head "Ratio Symptomatum of Chronic Bronchitis," our able and ingenious author makes many judicious observations, which our limits will not permit us to quote. The section on "Diagnosis," is also interesting, and this we cannot entirely pass over, without culling some valuable matter. The great object of diagnosis is between bronchitis and tubercular phthisis. But it is to be borne in mind that not only are these two affections extremely difficult of distinction in advanced stages, but they are often combined.

"Early in the disease, the abscence of pain during inspiration, the capability of resting on either side in bed, (when there is no abdominal disease,) the wheezing noise in respiration, the leaden colour of the lips, and the pallidity of the countenance, the appearance of the sputa, consisting almost entirely of mucus, occasionally streaked with blood, are symptoms sufficiently well marked to distinguish chronic inflammation of the bronchia from tubercular phthisis." -290.

When in an advanced stadia of the disease the symptoms usually indicative of tubercular consumption become intermingled with those of chronic bronchitis, "the peculiar pallidity of countenance still continues, and there is in the majority of cases no pain in the chest; or, if it come on, it is diffused over the whole chest. The dyspnœa is not so great as in tubercular phthisis, and the patient can take in a much larger volume of air into the lungs." These *plus* and *minus* distinctions we have always considered extremely unsatisfactory.

"The quantity of matter expectorated in this disease is much greater than in tubercular or apostematous consumption, except at the time a vomica gives way, when large quantities are brought up; but this excessive discharge does not continue long in the latter disease, whereas in chronic bronchitis we often see a pint or a pint and a half of matter expectorated during the night, and that for a long period together. We have not a short tickling cough in bronchitis; it is deep and sonorous. The paroxysms of hectic fever are much less regular in chronic bronchitis than in tubercular phthisis. The perspirations are partial, confined, perhaps, to the breast and upper extremities. The emaciation too is, generally speaking, less in inflammation of the mucous membrane

than in tubercular phthisis, though we do meet with cases in which the emaciation is as great in the former as in the latter affection. When the pulmonic symptoms have arisen from a diseased liver, it is a strong presumption that the seat of the disease is in the bronchial membrane; for in almost all cases of this description the mucous membrane is the part affected. When this combination occurs, the spirits are always depressed; and in addition to the usual pulmonic symptoms, we have in this form of the disease a painful and distended epigastrium, unnatural stools, and disordered digestion. The mouth is dry in a morning, and the tongue loaded. The fits of coughing are constantly excited when the stomach is overloaded, and are apt to come on when the patient is lying on either side in bed." 292.

Treatment. Broussais lays down two main indications in the cure of chronic inflammation of the mucous membrane of the lungs:—1st. to diminish the general excitability, and keep the circulation quiet; 2d. to draw the excitement and the fluids towards other organs, and particularly towards the skin. These we believe to be the grand objects to be kept in view. Of the means employed in the treatment of this complaint, Dr. Hastings observes that—"some act by directly enfeebling the force of the circulation; some moderate excitement by re-establishing the secretions throughout the system; others act on parts in the neighbourhood of that which is diseased; and a few are *directly* applied to the inflamed membrane." Both Broussais and Hastings give an unfavourable picture of the effects of *inhalation* of medicated liquids in diseases of the mucous membrane of the lungs; and were it necessary to strengthen such authorities, we could bring forward strong proofs, from our own personal observation, of the non-efficiency of these medicated local applications.

"Le seul corps étranger," says Broussais, "qu'on fasse parvenir dans les vésicules bronchiques, c'est l'eau en vapeur; mais il faut qu'elle soit chaude, et par sa temperature elle fait plus de mal qu'elle ne procure de soulagement par sa qualité relâchante. Je n'ai jamais vu résulter un grand avantage des fumigations. Tous ces moyens ne font que boursouffler la membrane, et augmenter le sentiment de plenitude et de compression pectorale."*

We think that M. Broussais has gone too far in condemning so decidedly the vapour of warm water as injurious in inflammation of the mucous membrane of the lungs, since we have seen considerable advantage derived from this measure; but we fear that what he says respecting medicated fumigations will be found too true. The vapour of tar is the only kind of inhalation which Dr. Hastings has tried.

"Not one instance has occurred in the author's practice of even temporary relief in tubercular consumption by the inhalation of this vapour:

* Broussais, Tom. I. p. 151.

indeed, it has appeared in some examples of this kind to cause a very tiresome irritation in the glottis, which has increased the cough. This has not been so much the case in chronic bronchitis; in this disease it seems to assist other remedies in restoring the mucous membrane to its healthy secretion; and in some very obstinate cases the inhalation alone has appeared to remove the diseased action in the mucous membrane of the lungs. In other instances the inflammation has been aggravated and rendered more acute by it. From the author's experience of this remedy, it appears that when the habit of body is irritable, and the inflammation at all active, the symptoms are increased by its use; but if the disease have been long in a chronic state, and the habit of body be not irritable, relief follows its application." 309.

The above, we believe, will be found a fair exposition of the effects of tar vapour—at least it corresponds with what we have seen ourselves; and we had opportunities of witnessing these effects a few years ago, when the hopes of relief drew crowds of pulmonary invalids to one of our principal naval dock yards, for the purpose of inhaling the vapour of tar on a large scale there, under the direction of a gentleman who published on the subject. Many phthisical patients, indeed, as is usual when any new remedy is tried, declared themselves wonderfully benefitted, for a time; but this benefit was, in most cases, either purely imaginary, or merely owing to the unusual evacuation of the lungs by the long-continued fits of coughing occasioned by the irritation of the tar fume. The tubercular disorganizations kept on, of course, their regular march.

In respect to blood-letting, Dr. Hastings justly observes, that although pulmonary inflammations, above all other maladies, are relieved by this powerful remedy, yet, "when the disease has existed long in the bronchial membrane, a considerable change takes place in its structure, and general debility always occurs, so that we cannot, in all cases, employ it with success." Even in those cases, Dr. Hastings thinks, where the chronic cough presents itself in persons not very much advanced in life, and whose constitutions are strong, with full pulse, inclined to hardness and frequency, large blood-lettings are improper, and "it is, perhaps, better to employ local than general blood-letting, for the former can be more frequently repeated, and the vessels of the lungs are thus unloaded at less expense to the system."

When catarrh has existed a long time in young persons, and produced symptoms resembling those of incipient phthisis, venesection will be improper. In such cases, recovery is slow, and is rather to be expected from the conjoined operation of several remedies than from the sudden operation of depletion. Repeated local detractions of blood are the safest means of reducing the superabundant excitement in the air-passages. Broussais, the

most energetic of our French brethren, does not even mention local or general bleeding in chronic inflammation of the mucous membrane of the lungs. He merely cautions his countrymen against the employment of tonics and stimulants in this disease, which were probably in vogue when he wrote. In fact, the continental practice is here, as on too many other occasions, very inert.

After the force of the circulation has been weakened, but not till then, Dr. H. thinks blisters and rubefacients may be applied to the chest. "They generally relieve the cough, and by the irritation they occasion on the skin, seem to lessen the superficial inflammation going on in the mucous membrane. By their action, also, the purulent secretion from the internal surface of the lungs is sometimes converted into the natural mucus of the part." In those obstinate cases resembling tubercular phthisis, the more permanent drain and counter-irritation of a seton or caustic issue, will be necessary. Broussais, and the continental physicians in general, attach much importance to topical applications to the chest. Broussais states that he had cured obstinate and long-continued catarrhal inflammations by large poultices to the front of the thorax. "Le soulagement fut si prompt, qu'il surpassa mon attente." "I have always," says he, "employed this remedy when circumstances permitted." "I prefer cataplasms to blisters when the patient appears, at the same time, nervous, irritable, and yet disposed to plethora." These cataplasms, he thinks, are superior to fomentations, as they are more manageable, and less apt to produce a chill, by wetting the patient's linen or bed-clothes. The same author highly praises rubefacients of lytta or mustard, in bronchitis. Issues are so important, that M. Broussais considers that physician reprehensible who has lost a patient without employing them. He observes, however, that, instead of being of service in *ulterior* stages, they hurry on the fatal event. It is at the point where acute inflammation is terminating in chronic, that issues are peculiarly serviceable. Caustic issues and setons, M. Broussais thinks, are nearly equal in point of utility. He tried cauteries in some cases with success; but does not speak very decidedly on their efficacy.

As in that variety of chronic bronchitis denominated "tussis senilis," the cough and dyspnœa are much aggravated by the redundant and accumulated secretions in the air-cells and passages, so emetics, by dislodging these secretions, are useful, as giving temporary relief. They have not, in Dr. Hasting's opinion, much effect "in forwarding a radical cure."

The digitalis purpurea," says the same author, "does not seem applicable to all cases of chronic bronchial inflammation; but when it assumes the form of catarrhal phthisis, the fox-glove, by diminishing the velocity of the pulse, and by promoting a free discharge of urine, often relieves the breast. It is highly beneficial in all those examples in which bronchial inflammation has a tendency to terminate in dropsy, its powerful diuretic effects preventing the accumulation of the exhaled fluids; but when the disease is attended with much protration of strength, digitalis, even if indicated, must be exhibited with great caution." 303.

Squill "is often serviceable when bronchitis assumes the character of chronic cough. Dr. H. has generally exhibited the powder in conjunction with ammoniacum, as in the pil. scill. comp. of the college pharmacopœia, and in old people, without much fever, found it of benefit. "The tincture of meadow saffron appears a very promising remedy in chronic bronchitis, and certainly possesses very remarkable powers. It allays the cough, promotes the flow of urine, and keeps up a regular alvine discharge." Dr. H. thinks it can be given much more generally than squills, being less irritating, and therefore administrable where there is considerable fever, which, indeed, is relieved by this medicine, as it opens the secretions. Dr. H. usually gives twenty drops thrice a day, unless diarrhœa supervene, when the dose is diminished. If twenty drops produce no effect, it may be increased till the bowels, skin, or kidneys are acted upon. "If there be much quickness of the pulse, the author generally combines eight or ten drops of the tincture of digitalis with that of the meadow saffron; from which combination the cough is often relieved, and the quickness of the pulse is diminished."

Drs. Duncan and Armstrong have lately recommended certain vegetable balsams in chronic inflammation of the mucous membrane of the lungs.

"The latter thinks that the copaiba deserves to be conspicuously placed amongst the internal medicines, as it seems to exert a specific influence on the mucous membrane It has failed with the author in producing so much benefit as he was led to hope from Dr. Armstrong's report. Whenever there is much fever, it appears to be increased by this remedy, and it does not always allay the cough, or alter the expectoration. It frequently disagrees with the stomach when given in sufficient doses to benefit the pectoral systems, and sometimes a diarrhœa comes on under its use. Occasionally it produces all these troublesome effects without relieving the cough. But this balsam certainly seems to exert an influence on the mucous membrane, although, perhaps, not a much greater one than the squills or meadow saffron. Further inquiry, however, may determine in what respects it is superior and in what inferior to these remedies. In the mean time, Dr. Armstrong has done considerable service by bringing the copaiba into general notice." 305.

As the balsam of copaiba is very frequently adulterated, the want of success in Dr Hastings's hands might have been partly owing to such circumstance.

A pill composed of extractum conii four grains, and pulveris ipecacuanhæ one grain, taken three times a day, often allays the cough, and produces a more healthy expectoration.

"There are some states of the system during the progress of chronic bronchitis in which cinchona may be useful; chiefly in those instances that succeed to acute bronchitis, where the debility brought on by the acute attack is very considerable. In such examples, if the dyspnœa be not increased, the benefits arising from its exhibition are sometimes very apparent. The profuse perspirations and other discharges are not only restrained by this remedy, but it occasionally appears to alter the secretion from the mucous membrane of the lungs, and thus brings about a more healthy condition of that membrane, by invigorating its blood vessels and restoring their natural tone. In these cases it may be combined with diluted sulphuric acid, which also tends to restrain the colliquative sweats that so often accompany this disease." 306.

Broussais observes that the cinchona sometimes proved useful; but he asserts that it is dangerous to continue it for any length of time—"parce qu'il n'est point ici le remede specifique." Pectoral ptisans, indeed, and diluent acidulated drinks with plenty of gum, appear to be the principal internal means which M. Broussais makes use of in this disease.

When chronic inflammation of the bronchia is combined with hepatic affection, Dr. Hastings recommends that "very small doses of calomel, or the blue pill, should be conjoined with the other remedies, and continued till the gums become slightly red, or till the appearance of the dejection is more natural, and the tenderness in the epigastric region is diminished." For the purpose of lessening the quantity of mercury in these cases, Dr. Wilson Philip has strongly recommended dandelion to be combined with it. Dr. Hastings remarks that this last medicine must be given in large doses, when, if the stomach bear it well, the flow of bile is promoted, and a healthy action of the bowels is kept up.

"If chronic bronchitis be combined with slow inflammation of the peritonæum and mesenteric glands, mercury may be carefully administered; but the disease generally resists this as well as every other remedy." 307.

The great utility of calomel in croup would tend to the hope of its being beneficial in chronic bronchitis; but the debility attendant on the latter disease is a strong objection. It is therefore chiefly used where the complaint is combined with abdominal affection.

"There are cases, however, in which it is advantageous in chronic bronchitis uncombined with any disease in the abdomen. These sometimes occur after measles, when the shrillness of the voice indicates considerable affection of the mucous membrane lining the trachea." 307.

Dr. Hastings and M. Broussais give different evidence respecting opium in chronic inflammation of the bronchial membrane. Dr. H states that this medicine "can only be regarded as a palliative, and from its stimulating effects is often prejudical, as long as there is much fever." In the chronic catarrh of old people, however, its use is sometimes, he thinks, unavoidable. "In such cases a full dose may be given at bed time, which will procure some rest in the early part of the night, before there is much accumulation in the bronchia and air-cells; but we must be very cautious in its use, as by preventing expectoration it sometimes proves fatal." *Hastings.*

"Opium," says M Broussais, "is a precious sedative, when the gastric susceptibility (which we scarcely comprehend the meaning of in this case) will permit its use. If it be combined with ipecacuan powder, it promotes the cutaneous discharge, and suspends the cough for whole nights—an unspeakable advantage in chronic catarrhal inflammation. It is far better to prevent the superabundance of bronchial secretion by opiates and mucilages combined with light tonics, than to be always endeavouring to expectorate it by squills and other acrid medicines, which only injure the already too sensible mucous membrane of the stomach." *Tom. I. p.* 154.

We have always looked upon the operation of opium in this class of complaints as rather preventive of *secretion* than of expectoration; and consequently after the febrile stricture is taken off, as unaccompanied with that danger which physicians so often speak of. Dr. Hastings himself remarks, that "in the latter stages of chronic bronchitis, where the quantity of matter expectorated is very large, and the cough very troublesome, there is no remedy so powerful in allaying the uncomfortable irritation about the glottis as opium." He thinks it, however, not always free from inconvenience or danger, even in such cases.

Our readers are aware that Dr Duncan, of Edinburgh, strongly recommends lactucarium as a substitute for opium, in many cases of pulmonary affection.

"Of all the medicines," says this venerable physician, "which I have employed for alleviating cough in phthisis, and indeed as a sedative in many other diseases, next to opium, I have found no article so beneficial as that substance which some have lately denominated lettuce opium, and which I termed lactucarium."* 308.

* Observations on Pulmonary Consumption. By A. Duncan, senior, M. D. 2d edition, p. 162.

In the sixth volume of the college transactions lately published, Dr. Louis Kerckhoffs states, that he administered, with great success, the white willow bark in powder, with sulphur in form of an electuary, to two patients who were apparently in the last stage of consumption, from affection of the mucous membrane of the lungs. Claret and nourishing soups were given at the same time.

For the effects of prussic acid in affections of the mucous membranes, we must refer to our analysis of two publications on this subject in the present number of the journal.

In the class of diseases under consideration, an attention to wha has been quaintly termed the non-naturals is of more consequence than medicine. The diet must always be bland and unirritating, though it is not necessary to adopt the pure and refrigerating regimen necessary in acute diseases. In the early stages where there is much disposition to general vascular action, milk and vegetables form the proper aliment—in the more advanced stadia, when considerable debility has supervened, a more nutritious diet may be allowed. Cordial stimulating drinks are, of course, always improper.

The air which the patient breathes is of equal consequence with the food. The maxim of Celsus is peculiarly applicable to chronic bronchitis—"pessimum ægro cœlum est quod ægrum fecit." Change of air often removes the disease when all other measures have failed. It is evident that as vicissitudes of temperature form one of the most frequent causes of the complaint, and are always apt to renew it, a warm and steady climate is extremely desirable. In this country a residence on the southern coast—especially about Penzance, for a few months in the summer, is to be recommended, as it sometimes invigorates the constitution, and restores the tone of the vessels on the bronchial surface, so as to prevent a return of the disease.

"In this climate," says Dr. H. "flannel next the skin during the spring and winter months, by slightly stimulating its vessels, sustains the circulation on the surface, and thus tends to relieve chronic inflammatory diseases of the pulmonary system." 311.

The bowels, of course, are to be regulated, "but purging is not beneficial." We doubt much whether we have not had too great a theoretical dread of purging when the mucous membrane of the lungs is carrying on the process of superabundant secretion. In two or three instances we have lately seen the balance of irritation beneficially shifted from the pulmonary to the gastric membranes, by smarter purgatives than we were formerly in the habit

of giving. We throw out this hint for others to act on or not, as they may think proper.

Exercise, where it can be endured, is very serviceable in chronic bronchitis—especially horse and carriage exercise, as well as the swing, invented by Dr. Carmichael Smith.

We must pass over a great portion of Dr. Hastings's book, dedicated to the record of numerous cases illustrative of the principles which have been here laid down, in order to dedicate a page or two to the last chapter in the work, which treats of dropsy as dependant on inflammation of the mucous membrane of the lungs. Our readers will have perceived that Broussais makes dropsical infiltrations a very common attendant on the ulterior stages of bronchial inflammation—or rather of the condensations of lung which so often are induced by the disease. Dr. Hastings appears to take a proper view of this pathological phenomenon. He justly considers that the long continuance of the bronchial disorder must embarrass the function of the heart, not only by the mechanical obstruction which will be offered to the lesser circulation of the blood, but also by the non-purification of the blood itself in the lungs.* The appearances on dissection corroborate this supposition.

"The lungs and the right side of the heart are much loaded with blood. The bronchial membrane is always inflamed, its texture often thickened, and sometimes ulcerated. The bronchia and air-cells are usually filled with a frothy fluid, mixed with pus. Occasionally the lungs are otherwise diseased. There is generally a considerable quantity of fluid in the sacs of the pleura, and very frequently the pericardium contains more than six ounces of fluid.

"The heart is in almost every instance enlarged, and sometimes adheres to the pericardium. On examining its internal structure we often find some marks of disease. These in general are but slight, and arise from inflammation of its inner membrane, which produces some degree of thickening about the auriculo-ventricular valves. In some cases the disorganization is much more considerable, these valves being found almost cartilaginous." 382.

No sooner is the structure of the heart, particularly of its valves, diseased, than the venous system becomes congested, and dropsical effusions are the consequence. On the treatment of this variety of dropsy Dr. Hastings makes many judicious observations. He comes to the same conclusions with Dr. Crampton, respecting the indications afforded by the urine; namely, "that he has now forsaken it as a guide to the treatment of dropsy." He wisely

* Till the dispute is settled respecting the oxygenation or decarbonization of the blood in the lungs, we might perhaps designate the process *pulmonization* of the blood.

observes that "we should rather be directed in the treatment by the state of the functions of the (internal) organs, and general inflammatory symptoms, than depend on the signs shown by any one excretion." He does not venture quite so far as Dr. Crampton in blood-letting, though he evidently approves of the principle. He inclines more towards local abstractions of blood.

"Eight or twelve leeches applied to the chest sometimes do more in relieving congestions about the thorax than several ounces of blood taken from the arm; and the symptoms are thus relieved by a smaller expenditure of the general strength." 397.

Dr. Hastings does not wish, however, to underrate the efficacy of venesection. "He believes that in many examples of dropsy succeeding to bronchial inflammation, in which the heart is gorged with blood, and the venous system much congested, general blood-letting, and general blood-letting only, can save the life of the patient." Our author conceives that the indiscriminate use of drastic purgatives in dropsy has been productive of considerable mischief. In the variety of dropsical affection under consideration, these drastic purgatives appear to him inadmissible—excepting towards the close of the disease, when the infiltrations are fast advancing, and suffocation is impending. In such cases they are to be had recourse to for temporary relief. He trusts principally to purgatives of the saline class, given so as to produce a constant laxative effect. The supertartrate of potash is strongly recommended, especially when combined with the tartrate of potash and infusion of senna. In respect to diuretics, the following are our author's sentiments:—

"In this dropsical affection we frequently find that a copious flow of urine almost immediately succeeds the loss of blood, and the swellings occasionally disappear without any diuretic remedies having been employed. This, however, is not common; the more usual result is, that the increased flow of urine does not continue, if the venesection be not followed up by remedies which act on the kidneys. The author has principally used for this purpose the following diuretics,—squills, foxglove, meadow saffron, and chrystals of tartar." 401.

With digitalis and squill he frequently combines small doses of the blue pill, especially where any hepatic disease is suspected.

"We are much indebted to those writers who have reprobated the indiscriminate use of mercury in dropsical diseases; but in this variety its administration, if kept within proper limits, is almost always beneficial. After the employment of blood-letting this mineral may not only tend to remove the congestion which invariably exists in the vessels of the liver; its general stimulating properties may also prove serviceable, by exciting the debilitated capillaries of the mucous membrane of the lungs to a more vigorous contraction." 405.

The meadow saffron, he thinks, deserves a fair trial in these cases. "In chronic inflammation of the bronchial membrane, it appears to regulate the secretion, to diminish the cough, and relieve the dyspnœa." It is evidently diuretic, and less stimulating than squills. The supertartrate of potash, however, should never be neglected; its mild saline diuretic and antiphlogistic qualities being peculiarly appropriate to the disease. Great care is necessary in the regulation of the diet, both during pulmonic affection, and in the convalescence which succeeds. After acute diseases the appetite is generally too keen, for some time, and blood is made too fast. Nothing is more common, in such cases, than relapses, from the weakened organ again taking on disease, especially where tonics are early and injudiciously given after the subsidence of the dropsical symptoms.

It is now high time to close this article, already rather too far extended. The numerous specimens of Dr. Hastings's work which we have laid before our readers, cannot but have impressed them with a high opinion of its own merits and its author's talents. It therefore needs no farther commendation from us, as the importance of the subject, and the ability with which it is handled by Dr. Hastings, will speedily induce the purchasers of select practical works to place the volume in their library, for reference as well as perusal. To our respected brethren on the Continent, especially M. Broussais, and to our able and zealous countrymen, Dr. Harrison and Mr. Alcock, we have been much indebted, in the construction of this eclectic article, and to them we offer the homage of our professional esteem.

MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

College of Apothecaries.—At a meeting of the druggists and apothecaries of the city and liberties of Philadelphia, held March 13, 1821, the following report and constitution, prepared by a committee appointed at a previous meeting, were considered and adopted: viz.

A very general impression appears to have prevailed amongst the druggists and apothecaries of this city for some time past, that from a concurrence of various circumstances, a departure from the correct customs and established principles of the drug and apothecary business has in some instances taken place. As the consequent effect the deterioration of many drugs and medicines in constant use and of great importance in practice, and medicines of inferior or sophisticated qualities are too often introduced into the shops. The want of proper pharmacological information on the part of some druggists and apothecaries who vend, and of physicians who buy, have mainly tended to the production of these irregularities.

The mischiefs that are necessarily attendant upon such a state of things have frequently attracted the attention of those interested in the trade, and means to remedy them have repeatedly been in agitation. All attempts heretofore made in relation to effecting more amendment having proved abortive, a number of the druggists and apothecaries, at the suggestion of one of the Faculty of Medicine in the University of Pennsylvania, directed the attention of the Trustees of that Institution to the subject, and in consequence, they have created a degree of Master in Pharmacy, to be conferred on those, who on examination, and having complied with certain requisites, may be found possessing the necessary qualifications and information.

The motives and views of the Trustees in this proceeding are highly commendable, and as far as their plan extends will be useful. But as must be apparent to those most conversant with the species of abuses that exist in the business and require correction, the plan of the trustees will not reach them, and whatever benefits may be derived from it must be prospective and slow in operation.

This measure of the University has had, however, the happy effect of recalling to the subject the attention of the druggists and apothecaries. It has roused them to a sense of the propriety of placing their business on the respectable footing it ought to possess as a branch of the science of medicine, by eradicating from it all present, and preventing a recurrence of future injurious practices; by creating the means of easily acquiring a perfect and scientific knowledge of drugs and medicines and the most approved mode of preparing them; and obtaining an acquaintance with sciences connected with their profession. These are important and highly desirable objects, and can only be effectually obtained by the interposition and active agency of the druggists and apothecaries themselves

The establishment of a College of Apothecaries, the attention of which will constantly directed to the qualities of articles brought into the drug market; in which subjects relating to their business and its objects can be discussed, and information beneficial and interesting to the trade communicated; and the erection of a school of Pharmacy, where lectures written expressly for the information and instruction of druggists and apothecaries will be delivered, as appear to the committee the best adapted to effectuate the reformation generally desired in the business, and obtain the advantages which have been the objects of much solicitude.

They therefore recommend to this meeting, an association to be formed by the druggists and apothecaries of this city, on the plan and for the objects above suggested, and with this view beg leave to offer the following constitution for such an association to its consideration.

Preamble.—Pharmacy is an important branch of the science of medicine. Deposited by the division of the science in the hands of the apothecary, it requires, on his part, intelligence, skill and integrity, to prepare and compound medicines for administration to the sick; to distinguish and select those drugs that are of the best quality, and possessed of those virtues, on whose efficacy reliance is placed to cure diseases; and to deal in no others. On the qualifications of the apothecary in these respects must depend, in no small measure, the success of the physician in his practice, and often the lives of his patients. The business therefore, to be conducted correctly and with safety to the community, renders varied, extended, and peculiar information necessary, not easily acquired without a regular course of studies and practical education; and without which, mistakes are liable to occur, involving health and life.

The different modes in which medicines can be prepared, dif-

fering in strength and consequently in their powers; the ease with which mixtures and sophistications totally destroying their virtues can be made and which are difficult of detection, offer great incitements to cupidity, and open a wide door to abuses that experience teaches, are inevitably introduced by an unregulated competition. More injuries have been sustained by society from such a competition, than benefits have been conferred; for the reduction of price has chiefly been effected by a deterioration of quality. The existence of a state of things so pregnant with evils of great magnitude, must bring the profession into disrepute, and loudly calls for a timely and effectual remedy upon those who feel an interest in maintaining its respectability.

In order therefore to provide the means of instruction by the establishment of a school of Pharmacy in which shall be taught those branches of knowledge essential to the education of an apothecary; to incite a spirit of pharmaceutical investigation and research and to diffuse information amongst the members of the profession; to guard the drug market from the introduction of spurious, adulterated, deteriorated or otherwise mischievous articles, which are too frequently forced into it, by watching and giving early warning of their appearance; to regulate the business as far as may be practicable and consistent with our social Institutions; to establish such rules as may promote an harmonious intercourse among its members; to remedy many existing abuses; to advance the character and forward the interests of the profession; the undersigned druggists and apothecaries of the city of Philadelphia agree to associate together under the constitution hereunto annexed, to the principles of which they give their earnest support, and by which they will abide.

Article 1. The association shall be styled the Philadelphia College of Apothecaries, and shall consist of those druggists and apothecaries who shall sign these articles, and of those who shall hereafter be admitted under the regulations established by this constitution.

Art. 2. The officers of this college shall be a President, two Vice Presidents, a Secretary and Treasurer, who shall be elected within one month from the adoption of this constitution and subsequently at the meeting held in the month of March in each year.

Art. 3. The President, two Vice-Presidents and Secretary shall perform the duties of their respective offices at the meetings of the College, and shall sign the certificates of membership and the Diplomas of the Institution. The treasurer shall receive and take care of the funds of the College, giving bond and security if required to the President for the faithful performance of his trust.

He shall pay no monies unless on the order of the President or the Chairman of the Board of Trustees, countersigned by the respective Secretaries of the College or board as the case may be; and present a statement of his accounts at the meeting in the month of March, or when required by the Board of Trustees.

ART. 4. The stated meetings of the College shall be on the last Tuesday of the months of March, June, September, and December, for the transaction of business, and receiving of essays and communications on subjects connected with pharmacy, materia medica and chemistry. Twenty members shall constitute a quorum.

ART. 5. The affairs of the College shall be transacted by a board of Trustees, consisting of sixteen members, who shall be elected within one month from the adoption of this constitution; one-half of whom, to be determined by lot among themselves, shall serve till the meeting in September, and who shall subsequently be annually chosen, one-half at the meeting in the month of March, and the other half at the meeting in September. The officers of the College shall be ex-officio members of this board. The board of Trustees shall meet once a month or oftener if necessary, by adjournment or on the call of their chairman, and a majority of the board shall constitute a quorum for the transaction of business. It shall be the duty of the board of Trustees to establish a school of pharmacy, provide suitable apparatus, and a library, and appoint one or more lecturers as may be deemed expedient, on materia medica, chemistry, and pharmacy, and on such branches of natural science as may be useful in the instruction of an apothecary; to appoint a committee of inspection, who shall examine all articles of drugs and medicines brought into the market and submitted to them, and report their character to the board of Trustees, who shall make the same public if required by the interests of the trade and the good of the community; to appoint a committee of equity, to settle any disputes that may arise in the transactions of business by the members of the College, which may be referred to them. They shall be entrusted with the election of members of the college, and have power to frame rules and regulations for the examinations and granting of diplomas to those who shall attend the lectures of the school of pharmacy.

ART. 6. Any person who has been regularly educated as a druggist or apothecary, or who has received a diploma from this College, and is of correct, moral deportment, may be proposed for membership, in writing, by two of the members of the College, at a stated meeting of the Board of Trustees, and balloted for at the

next stated meeting. Three-fourths of the votes shall be necessary to an election.

ART. 7. Each person who signs this constitution, and every person on becoming a member, shall pay the sum of five dollars; and to maintain the funds of the College, an annual contribution of five dollars shall be paid by each member. No member who has neglected to pay his installation fee, or is in arrears six months for his annual contribution, shall be entitled to a vote.

ART. 8. Complaints may be preferred against any member of this College to the Board of Trustees, for malpractices and misconduct in his business; and if on investigation it shall appear, that he has been guilty of adulterating or sophisticating any articles of medicines or drugs, or of knowingly vending articles of that character, or of deteriorated qualities, the facts may be reported by the Board of Trustees to a meeting of the College publicly called, when a majority of all the members of the College concurring, he may be expelled.

ART. 9. No amendment or alteration of this Constitution shall be made, unless proposed to the College by two members at one stated meeting, considered at the next and adopted by two-thirds of the members present.

At a meeting of the College of Apothecaries, held March 27, 1821, the following persons were elected officers of the College.

President—Charles Marshall.
Vice-Presidents—William Lehman, Stephen North.
Secretary—Daniel B. Smith.
Treasurer—William Heyl.

Trustees.

Charles Allen.
Samuel Jackson.
Charles Marshall, jr.
Henry M. Zollikoffer.
Daniel Elliot.
Henry Troth.
Samuel Biddle.
Peter Williamson.
Peter Lehman.
Samuel P. Wetherill.
Jeremiah Morris.
Thomas Wiltberger.
Daniel Thatcher.
Thomas M'Clintock.
Warder Morris.
Frederick Brown.

Copy of the Report to the Secretary of State for the Home Department, from the National Vaccine Establishment, dated May 18, 1820.

To the Right Honourable Lord Viscount Sidmouth, Principal Secretary of State for the Home Department, &c. &c. &c.

National Vaccine Establishment, Percy-street, May 18, 1820.

MY LORD,

The Board of the National Vaccine Establishment have the honour to report to your Lordship, that the number of persons vaccinated during the last year, in London and its vicinity, exceeds the number of any former year; it amounts to 8,957. Within the same year, 51,005 charges of vaccine lymph have been distributed to the public.

An abundant, an unceasing supply, which could only be afforded by such an Institution as that which the Board have the honour to direct, has enabled us to answer the earnest demands for vaccine lymph, from various parts of Great Britain and Ireland, from Jamaica, St. Vincent's, Dominica, Tortola, Grenada, Nevis, Montserrat, Antigua, St. Christopher's, Demerara, Hayti, and the Cape of Good Hope.

Lymph has also been occasionally requested from the continent of Europe, and charges were lately transmitted to Hamburgh and Hanover.

Our correspondents in Great Britain and Ireland have reported to this Board, that the number of persons vaccinated by them, during the year 1819, amounts to 74,940; forming, with the number vaccinated in London and its vicinity, a total of 83,897 persons in one year: yet many send no returns, or the number would be considerably greater.

From these facts the Board think themselves entitled to conclude, that the practice of vaccination in his Majesty's dominions continues to advance, and therefore that the confidence of medical practitioners, and the confidence of the public in that practice, remain unshaken; notwithstanding many unfavourable occurrences, with which it will be our duty to acquaint your Lordship.

The reports transmitted to this Board likewise warrant the conclusion, that, wherever small-pox inoculation is abandoned, and vaccination exclusively favoured or commanded, the most striking illustrations of the value of the Jennerian discovery are uniformly afforded; for, in addition to those places mentioned in former reports, in which small-pox is now unknown, the Board have

received information that no case of that disease has occurred since the year 1804, at Shottisham in Norfolk; nor since the year 1817, in the city of Gloucester. The boroughs of Clonmell and Newton Limavady in Ireland, and Mothwell in Carmarthenshire, with the whole country for twenty miles around it, are reported to have completely succeeded in the extirpation of the small pox; and in the island of Guernsey, only one solitary case of that fatal distemper is known to have occurred during the last year.

The career of vaccination appears, however, to have been less brilliant in its native country than in some parts of the continent of Europe, where the practice of it is enforced by legal enactments, and inoculation for small pox is prohibited by severe penalties. Under such regulations, it is affirmed that the small pox has ceased to exist in Denmark for the last eight years; and that the knowledge of this fact has now induced his Danish majesty to proclaim the same in his West India colonies.

The Board are also informed, by a most interesting communication from Dr. De Carro of Vienna, that similar decrees have been published in the Austrian Dominions, and that small pox is now confined to that portion of the poor who, by concealment, contrive to evade the imperial ordinances. He announces that, since the year 1799, when he gave the first example to the continent of Europe by vaccinating his two elder sons, he has never seen a single case to weaken his confidence in the efficacy of that practice.

An important letter, together with a treatise on this subject, has also been transmitted to the Board from Dr. Krauss, an intelligent physician, who is charged with the superintendance of vaccination in the circle of Rezat in Bavaria. He affirms that in that circle, containing half a million of people, small pox has never occurred since the year 1807.

If these facts be correctly reported to us, they would appear to afford convincing proof that the extinction of small pox is entirely within our power.

The testimonies of some of our correspondents in this country, are by no means so favourable. They concur in showing, that great numbers of persons who had been vaccinated have been subsequently seized with a disease presenting all the essential characters of small pox; but that, in the great majority of such cases, the disease has been of comparatively short duration, unattended by symptoms of danger. In several of these cases, however, the malady has been prolonged to its ordinary period; and in eight reported cases it has proved fatal.

It appears to us to be fairly established, that the disposition in

the vaccinated to be thus affected by the contagion of small pox, does not depend on the time that has elapsed after vaccination; since some persons have been so affected who had recently been vaccinated; whilst others, who had been vaccinated eighteen and twenty years, have been inoculated and fairly exposed to the same contagion with impunity.

Nor is it undeserving of remark, that, whilst cases of small pox in the vaccinated have frequently been reported to us from some parts of the kingdom remote from the metropolis, no cases of a similar nature are known to have happened in other districts equally populous. Very intelligent surgeons in the different counties of Norfolk, Devonshire, Middlesex, Cheshire, and Staffordshire, who together have vaccinated more than 30,000 persons, assert that they never saw or heard of small pox in any one of their vaccinated patients.

But no assertions of individuals, however respectable, are so well calculated to direct the judgment of your Lordship as the registers of public charities.

The practice of vaccination was begun in the Small Pox Hospital of London in the year 1799, soon after the promulgation of Dr. Jenner's discovery, and has been continued to the present day. In the last annual report it is stated by Dr. Ashburner, "that the benefit of vaccination has been extended within the year to 3,297 persons; that one only of the 46,662 cases mentioned in former reports has been since affected with the varioloid eruption occurring after vaccination."

At the Foundling Hospital, vaccination was introduced nineteen years ago; and we are informed by Dr. Stanger, that only two cases of disease, bearing any resemblance to small pox, have hitherto occurred in the vaccinated of that institution.

Mr. Mac Gregor assures us, that, in the great assemblage of the sons and daughters of soldiers who are brought up at the Royal Military Asylum, no case, even of the mildest small pox, has ever occurred after vaccination.

Under the immediate direction of the National Vaccine Establishment, more than 60,000 persons have now been vaccinated in London and its vicinity, and of this large number only five are reported to have been subsequently affected with small pox; although positive orders are given at every station to report all such cases as are even suspected.

This success in London, where the vaccinated are continually exposed to the contagion of small pox, is strong evidence in favour of the practice adopted and inculcated by this Board, and induces us to believe that a departure from that practice is one

source of the evil which has prevailed in different parts of the kingdom.

The great principle of that practice is to affect the constitution of each individual very completely with the vaccine disease; and the board have thought it right to direct that lymph should never be employed from any vesicle in which the slightest irregularity or imperfection can be observed, nor even from a perfect vesicle after the areola is formed; that two punctures be made in each arm, in order to secure at least three perfect vesicles; that one vesicle on each arm should be left unopened, and the lymph be suffered to be absorbed or desiccate; that if the vesicles be accidentally broken or much injured, or if they present any irregularity, the patient should be carefully re-vaccinated as at first.

From extensive experience and numerous reports, the Board have become most earnestly desirous that more, rather than fewer, vesicles should be produced. We think it especially wrong to confide in one vesicle, and highly imprudent to open all: but no treatment will be effective in certain constitutions; for twenty-one cases of small pox occurring after small pox have been reported to us within the last twelve months, three of which were fatal.

We have regarded it, my Lord, as one of our first duties to consider attentively the different cases of small pox after vaccination, as they have been transmitted to us. We have endeavoured to investigate them, free from the influence of theory, and solely intent on the discovery of truth: and, when we take into our view the immense number of the vaccinated, when compared with the reported failures;—when we reflect on certain peculiarities of constitution, that will exempt some individuals from all common laws;—when we think on the ignorance and carelessness which the vaccinator has but too often betrayed;—when we recollect the mild form which small pox is reported to have very generally, though not universally, assumed in the vaccinated;—we cannot hesitate to assert, that our conviction in favour of the experiment of universal vaccination is unshaken.

It is a painful duty for us to state to your Lordship, that 712 persons are reported, by the Bills of Mortality of London, to have died of small pox within the last year; and that the ravages committed by this disease in many other cities, and in many parts of the country, have also been great; yet we believe them to be fair-

ly attributable to the neglect of universal vaccination, and the partial but too frequent practice of small pox innoculation.

(Signed) J. LATHAM, M. D. *President.*

ARTHUR DANIEL STONE,
ROBERT BREE,
EDWARD THOMAS MUNRO,
GEORGE L. TUTHILL,
} *Censors of the Royal College of Physicians.*

DAVID DUNDAS, *Master of the College of Surgeons.*

THOMPSON FORSTER,
EVERARD HOME,
} *Governors.*

By order of the Board,

JAMES HERVEY, M. D. *Registrar.*

[Medical and Physical Journal for Dec. 1820.

Anatomical discovery respecting the Lymphatic Vessels.—Dr. VINCENZ FOHMANN, Prosector at the Anatomical Theatre at Heidelberg, announces, in the Salzburgh *Medizinisch-Chirurgische Zeitung*, (No. 46, June, 1820,) a discovery respecting the lymphatic vessels, that seems calculated to elucidate some important points in physiology.* In his researches, during last winter, respecting the intimate structure of the intestines of man and inferior animals, he found, by accident, in the large intestine of a lion which he dissected, a net work of lymphatic vessels which had not been remarked in any animal, and which, on being injected with mercury, appeared to him to *inosculate directly with veins:* (ihm unmittelbar in *venen uberzugehen schien.*) This discovery led him to make new researches in other animals, and he found similar lymphatic vessels in other *carnivores;* namely, the *procyon lotor* and the common *dog*: but here he could not clearly ascertain the passage of the mercury into the veins. He repeated, in the month of April, the injection of the same lymphatics in the *phoca vitulina*, and what he could not effect by means of the *vasis chyliferis*† *of the large intestine*, he effected perfectly by those of

* It is a remarkable circumstance, that Professor HARLESS, of the University of Bonn, had formed a notion that such an anatomical structure probably existed, before this discovery of Dr. Fohmann, as he states in his work (which we shall notice particularly in the next half-yearly Review of the Progress of Medicine,) *Ueber und Gegen den Neueren Eempiaismus in der Physiologie und Medicin*, seit 59; such a structure, he thinks, being calculated to explain and reconcile the apparently opposing results of the experiments of several eminent physiologists respecting absorption.

† This is Dr. Fohmann's own expression; but, on speaking of the vessels in question in the lion, he uses the term *lymphgefassea:* he, indeed, employs the terms *chyliferous* and *lymphatic* vessels synonymously.

the small intestine; then, after having filled all the *lymphatics of this intestine*, and having pursued them to the *pancreas aselli*, he found some small *vasa efferentia*, by which the quicksilver had passed into the mesenteric vein. He repeated the injection in a second *phoca*, and found the metal past into the same vein as in the foregoing experiment. He on this occasion put a ligature on all the mesenteric vessels, at some distance beyond the large mesenteric glands; and he found that those glands, as well as the veins, were filled with the mercury. He has witnessed the same facts in the dog, cow, and horse; but has not yet had an opportunity of examining the state of those parts in man: but he considers that other physiologists will investigate this subject; and he makes a question whether the thoracic duct really receives all the chyliferous vessels, or whether the names of Pecquet and Mascagni have caused a supposition to be admitted as a fact.

Dr. Fohmann announces that he intends to publish, almost immediately, a work on the true disposition and developement of the intestinal glands of men and inferior animals, in which the facts above stated will be more particularly developed.

London Medical and Physical Journal, Nov. 1820.

Animal Magnetism.—The following proposal has been made and published, (in the *Archiv fur den thierischen Magnetismus*,) by M. CHASTENET DE PUYSEGUR, the first animal magnetiser in all France. "Let me be invited, let me even be ordered, if it be wished, to confine myself for six weeks in an hospital for the deaf and dumb, that I may lay in wait for, and seize, the occasion of transient disease in some of the pupils, to magnetize them. Let them not be informed in any way of what they are to experience; but let them suppose that I am present as an ordinary physician. Several of them, unavoidably, will become somnambulists, and in the number there will certainly be found some who are more mobile than the rest, who will become sensible of the influence of my *animal* magnet. Well then, if in this state I do not make them act, walk, take what I choose, or answer by writing all the questions I shall put to them relative to their welfare and their health, not from my speaking to them, since they would not hear me, but solely by the mental impulse of my will; let it be decided that there is neither magnet nor magnetism in man. I will even subscribe to the decision that, during the more than thirty years which I have affirmed and published its existence, I have been only an apostle of error, of illusion, and of deceit."

When a sect of fanatics, about a century since, pretended to have the power of raising up to life a dead body, and proposed a

test of their ability, the government acceded to their request. When we remember that there has been appointed a professor of animal magnetism at the Royal Academy of Sciences at Berlin, (Dr. WOLFERT;) that this professor superintends an infirmary for its application; and that Russian and Austrian physicians are appointed by their governments to attend him, and learn his method, we must acknowledge that the subject has assumed an air of sufficient importance to induce some government to consent that M. Chastenet de Puysegur shall have the opportunities he desires.

[*Ibid, October*, 1820.

General Considerations on the Mode of Administration of Medicines; and Observations on the Internal Employment of Acetate of Lead. By Professor Fouquier. Arranged and published by Dr. Ratier.—After detailing the precautions employed to preclude the possibility of deception in the experiments, made with a view of ascertaining the precise operation of various articles of the materia medica on the animal economy, and refuting the objections which may be advanced against their accuracy, the author circumstantially narrates thirteen cases illustrative of the efficacy of acetate of lead, in suppressing the colliquative sweats of phthisis pulmonalis. The results appear to be stated with great candor and impartiality, and from them the following corollaries are lastly drawn:—The acetate of lead is endowed with a peculiar property, by virtue of which it suppresses the colliquative sweats of phthisis. This action may be considered as specific, since it takes place almost constantly, and independently on circumstances which would seem to oppose it. This substance cannot correctly be accused of producing the lead colic. It may be administered without danger to the amount of twelve grains a day. The mean dose is from four to eight grains. A certain quantity must be introduced in order to produce its sensible effect. As the sweats of phthisis, kept up by a permanent cause, have a tendency to recur on the cessation of the remedy, the employment of the acetate of lead should obviously be continued.

In the bodies of those whose death afforded the opportunity of examination, the intestinal canal seems not to have exhibited any trace of injury from the administration of this powerful remedy. It was invariably given in the form of pills. The expectation held out by some authors of the cure of phthisis by acetate of lead, is acknowledged to be quite illusory. In none of the cases here recorded does the salt, although largely given, appear to have induced severe colic. [*London Med. Repository for Jan.* 1821.

Royal Society of London.—Nov. 9. A PAPER by SIR E. HOME, was read, entitled "*On the Black Rete Mucosum of the Negro, being a Defence against the Scorching Effects of the Sun's Rays.*" The author began by stating some observations which had induced him to form the opinion that the scorching effects of the sun's rays are produced, not merely in virtue of their heating power, but by the joint agency of their heat and light. To verify this opinion, he made several experiments which showed that the face and hands may be exposed to a temperature of 100°, or even 120°, without pain being produced, provided the light be excluded: but that if the same, or even an inferior degree, of heat be produced by the direct rays of the sun, the parts are scorched, and blisters are produced. This effect he found to be completely prevented by covering the hand or face with black kerseymere; and the same purpose is attained by the black rete mucosum of the negro. In those cases when a black covering was superimposed, perspiration came on; and the same takes place on the skin of the negro, when exposed to the direct rays of the sun.

The author observed, also, that the eyes of those animals exposed to the strong light of the sun are furnished with a black pigment, apparently for the same purpose; while others, which are abroad by night, and consequently not needing such a protection, are not provided with it.

[London Med. and Phys. Jour. for Jan. 1821.

We extract the following aphorisms respecting the treatment of *Puerperal Fever*, from the Inaugural Thesis of a Dr. LEGOUAIS, maintained during the last year before the Faculty of Paris; not because they are *new*, for they are merely principles which Dr. ARMSTRONG had previously established in the most satisfactory manner, but because the author was a pupil of Professor CHAUSSIER, and for a long time a resident student at the Lying-in Hospital *La Maternité*. They are, therefore, deduced from very extensive observation, and are, no doubt, the precepts of the excellent Professor whom we have just named. Such coincidences of opinion, especially when the extraordinary acquirements, remarkable acumen of observation, and very rare intellectual talents, of Chaussier are considered, cannot fail to give a great degree of interest to the following paragraphs.

"1. Excepting in the cases where there exist some particular and manifest contradictions to the use of local, and especially of general, evacuation of blood, in the treatment of puerperal peritonitis, this measure should be the first to be employed.

"2. In order that bleeding may be followed by success as certainly as we can ever expect in the treatment of diseases, it should

be employed in the first stage,—that is to say, in by far the greater majority of cases, before the termination of the first day of the disease; and, moreover, that a sufficiently abundant quantity of blood should be taken away to destroy at once all the violence of the malady.

"3. When employed not in conformity with those two essential conditions, sanguineous evacuations, far from being useful, always become very injurious to the patient, by destroying her strength and the resources of nature, without having a durable influence against the disease.

"4. In the cases,—and these are the most common instances, where constipation is one of the attendant circumstances of the disease, another indication, not less pressing for its fulfilment, is joined with that of blood-letting, which is to excite alvine evacuations, by gentle, or even by somewhat active, purgatives, and thus to maintain a sort of artificial diarrhœa during the whole of the duration of the disease; a duration which, in the greater number of cases where the termination is favourable, does not exceed the space of from two to four days.

"5. When a diarrhœa exists from the commencement of the disease, nothing should be done to suppress it when it is moderate: when, on the contrary, it appears excessive, none but mild and soothing means should be employed, such as emollient clysters, mucilaginous drinks, and some opiates; and we should by no means add to the irritation by the administration of astringents."

[*Ibid.*

We select the following theorems from the Inaugural Thesis of Dr. RATIER, sustained last year before the Faculty of Paris. They are, in almost every instance, only conformable with some of the inferences comprised in the excellent Treatise on the Blood of Mr. THACKRAH; but it can never be considered uninteresting to witness a similarity of results from the researches of different persons on an important and practical subject relating to medicine. Alluding to the *buffy coat* on the blood, Dr. Ratier says—

"1. It is foreign to the state of perfect health, and equally so to bilious, mucous, typhoid, and asthenic, diathesis; to passive hemorrhages; and to nervous and organic affections.

"2. It appertains to the state of plethora, but only when it exists with a disposition to inflammations in general, and especially to those of the serous and parenchymatous membranes. It may exist without general inflammatory disposition in the system, when there is a very intense local inflammation.

"3. Its presence, and, when it exists, its thickness and density, depend on the intensity of the inflammation, on the largeness

of the incision, on the form and rapidity of the jet, and, lastly, on the form of the vessel in which the blood is received.

"4. It is always composed of fibrine,—at least of a great proportion of that substance.

"5. It always manifests itself in a direct ratio with the intensity of the inflammation.

"6. Its presence, in connection with the other symptoms of inflammation, confirms the diagnostics of that affection.

"7. The absence of it should not be considered a reason for not resorting to blood-letting, if it be otherwise indicated.

"8. Its presence without clearly evident signs of inflammation should rouse the attention of the practitioner, and render him very circumspect if he employs tonics.

"9. Some anomalies may occur in respect to its existence, and in some cases, even with all the apparently requisite conditions, it is not manifest; but then we constantly find an extraordinary degree of density of the coagulum."

Report of the Surgeons of the New York Eye Infirmary.

At a meeting held at the City Hotel on Friday evening, the 9th instant, for the purpose of adopting the means of perpetuating the benefits of the Infirmary for curing diseases of the Eye, Col. Wm. Few, was called to the chair, and James Eastburn was appointed Secretary.

A report of the history and progress of the Eye Infirmary under the care of J. Kearny Rodgers, M. D. and Edward Delafield, M. D. was read by the latter gentleman, as follows:

In the month of August last, an Institution was founded in this city, under the title of "*The New York Eye Infirmary*," for the purpose of curing diseases of the eye among the poor; a class of our citizens, from their habits and occupations most exposed to diseases of that important organ. It had been observed that at the public institutions of this city alreaded founded, for the cure of the diseases of this class of our inhabitants, comparatively a very small number of persons afflicted with affections of the eye applied for relief, while it was known, and the result has proved, that a very large number of individuals were constantly labouring under such diseases. Such patients could hardly be considered objects of our city hospital, as long as that valuable institution is so constantly filled with persons affected with diseases of a more formidable and dangerous nature. For the same reason, the attention of the physicians of the City Dispensary is so much occupied with calls of a more urgent nature, that they have little leisure to at-

tend to a class of diseases, whose effects, although sufficiently distressing, and such as to incapacitate those labouring under them from pursuing their ordinary avocations and gaining their usual subsistence, are not generally dangerous to life. And yet, not a few of the paupers of this city have become so, from blindness either complete or partial, induced by disease of this class, either curable in the first instance, or still capable of allevation, sufficient to enable the sufferers to enjoy a very useful degree of vision, and place it in their power to gain an honest subsistence, without calling upon the public bounty for support. In this manner, an Infirmary of this description, may at a very trifling expense save to society the usefulness of many worthy citizens, and prevent them becoming a burthen to the public for the remainder of their lives. These facts are not stated merely as hypothetical, for it is from information derived from the medical attendant at the alms house at Bellevue, that it is stated that a considerable number of paupers are annually received and supported there, who have been reduced to the necessity of subsisting on the public bounty by loss of sight induced by diseases which might have been cured by proper attention in the first instance.

Another class of citizens, and a still more numerous and useful one than the abject poor, are essentially benefited by such an institution. A large portion of our population consists of industrious tradesmen and mechanics, of females with very small incomes, and various other individuals, whose means are just adequate to their support while in health; who have it not in their power to bear the expense of obtaining good advice, when afflicted with diseases threatening the loss or impairment of sight, and yet have too much independence of feeling to apply to any general hospital or dispensary for relief. To an institution founded for the sole purpose of curing diseases of the eye, such persons apply and receive relief, and to this class of persons, perhaps more than to all others, such an institution is invaluable.

Such were the objects which induced the individuals concerned in this undertaking, to engage in it, and the result has more than answered their expectations, and demonstrated to them the usefulness and necessity of their labours.

The Infirmary has now been in operation nearly seven months; and during that period, *four hundred and thirty-six patients* have applied, and received various degrees of relief. From the nature of the institution, it is impossible to make a report of the result of all the cases which have been treated.

As most of the patients are prescribed for at the Infirmary, a large portion of those who receive advice, never report the result

of their cases; and continuing to attend till nearly cured, do not, when the cure becomes perfect, return to give notice of it. Notwithstanding this difficulty, however, the result of a sufficient number of cases has come to the knowledge of the Surgeons of the Infirmary, to prove to them that their efforts have been crowned with as much success as generally attends such institutions.

Many persons, perfectly blind, have been restored to sight. Many who, until they heard of this Institution, had ceased to hope for relief, from constant disappointment in numerous trials of unavailing remedies. Several individuals, born either totally or partially blind, have been taught to feel the blessings of sight, and to enjoy the pleasure and advantage of a sense before unknown to them. Numerous cases of acute diseases of the eye, which, if neglected or improperly treated, would have inevitably destroyed that organ, have been arrested in their progress, and either perfectly or partially cured. Many individuals labouring under various harassing and distressing affections of the eyes, which have existed during the greater part of their lives, have had them either totally removed, or made less distressing and more tolerable. Often has it happened to the Surgeons of the Infirmary, on the same day to see persons with their eyes irretrievably destroyed by diseases under which they suffered in their childhood, and children with the same diseases, in a state admitting of an easy cure.

So great has been the number of patients relieved by, and such the usefulness of an institution, as yet hardly known to exist, by the mass of our inhabitants, and supported by the efforts of only a few individuals; how much more useful must it become, and of how much greater advantage must it prove to our city, when it has become a public institution, and is generally known. It does not appear at all probable that the number of patients who have applied, bears any considerable proportion to the great mass of those who labour under diseases of the eyes, and are unable to procure proper advice, who would be relieved by the institution, were its existence more extensively known.

Independently of the reasons which have been stated, sufficient in themselves to call for the foundation of an Infirmary like the one in question, the surgeons of that institution were influenced by others not less powerful. It is acknowledged on all hands, that the diseases of the eye have heretofore very little engaged the attention of the physicians of this country; and while it is known that the variety of affections to which that organ is subject, is so great, and their similarity in symptoms so considerable, as to re-

quire the constant habit of observing and treating them, to enable the practitioner to discriminate sufficiently well between them for him to arrive at any considerable success in his practice; few individuals of the profession had yet undertaken to make this branch of their science a particular study; and no institution existed, where a sufficient number of patients were collected either to give the physician much experience in the treatment of those diseases, or afford a practical school for the student to observe and become familiar with them. Since the establishment of a similar institution in London, more improvement in the treatment of these diseases, and more valuable observations on their nature and symptoms, have been made within ten years than had been done in half a century before. As a practical school of surgery then, as well a charitable institution, calculated to do much good, it is hoped the Infirmary will prove itself an useful object for the encouragement of our fellow citizens.

Influenced by these motives, the surgeons of the infirmary, assisted by the advice and countenance of Doctors Post and Borrowe as consulting surgeons, to whom they might have recourse in difficult and unusual cases, determined to open the institution, the history and progress of which have now been laid before this meeting. They have been content to bear the expense attending it, and devote their time to it, sufficiently long to carry it completely into operation, and demonstrate its utility. The continuance of its existence, and the extension of its usefulness, must now depend upon the liberality of their fellow citizens; and with confidence they rely upon it, when they recollect how often it has been extended towards useful and charitable objects.

With the advice, therefore, of many gentlemen, eminent both for their virtues and talents, this meeting has been called, and a plan arranged to make the "*Infirmary for curing Diseases of the Eye*" a public institution.

EDWARD DELAFIELD, M. D.
J. KEARNY RODGERS, M. D.

March 9th, 1821.

Statement of Deaths in the City and Liberties of Philadelphia, from the first of January, 1820, to the first of January, 1821, specifying the Sexes, Ages, and Diseases of the deceased persons.

DEATHS IN EACH MONTH.	ADULTS.	CHILDREN	TOTAL
Jan.	96	135	231
Feb.	99	97	196
March,	127	136	263
April,	130	101	231
May,	113	83	196
June,	126	112	238
July,	124	217	341
August,	262	321	583
Sept.	171	144	315
Oct.	178	133	311
Nov.	136	92	228
Dec.	241	110	241
Totals,	1693	1681	3374

AGES.				
Under	1	Year		835
From	1	to	2	307
	2	to	5	241
	5	to	10	130
	10	to	15	74
	15	to	20	101
	20	to	30	446
	30	to	40	396
	40	to	50	313
	50	to	60	202
	60	to	70	152
	70	to	80	69
	80	to	90	61
	90	to	100	18
	100	to	110	3
	110	to	120	2
Total,				3374

The above mentioned Deaths were caused by the following Diseases and Casualties, viz.

Apoplexy,			44
Abscess,			17
Asthma,			11
Atrophy,			19
Angina Pectoris,			9
Apthæ,			2
Aneurism,			2
Burns,			14
Consumption of the Lungs,			446
Convulsions,			162
Casualties,			21
Cholera Morbus,			263
Catarrh,			36
Cancer,			22
Caries,			2
Cholic,			12
Contusion,			4
Cynanche Maligna,			2
Child-Bed,			1
Carried over,			1088
Brought over			1088
Debility,			162
Dropsy,			77
in the Head			115
of the Breast,			17
Decay,			35
Dyspepsia,			7
Dysentery,			127
Diarrhœa,			64
Drunkenness,			31
Drowned,			35
Drinking Cold Water,			1
Disease of the Hip Joint,			1
Epilepsy,			18
Eruptions,			1
Erysipelas,			8
Fracture,			4
Fever,			71
Typhus,			109
Carried over,			1971

Brought over	1971	*Brought over,*	2755
Fever Bilious,	154	Inflammation of the Uterus	2
Malignant,	73	Insanity,	20
Remittent,	77	Jaundice,	8
Intermittent,	10	Leprosy,	1
Inflammatory	4	Locked-Jaw,	6
Scarlet,	31	Measles,	47
Nervous,	14	Old Age,	48
Hectic,	9	Palsy,	36
Puerperal,	13	Pleurisy,	22
Gangrene and Mortification,	26	Rheumatism,	7
Gout,	6	Still-Born,	185
Hooping Cough,	11	Spasms,	3
Hives,	89	Stranguary,	1
Hernia	2	Spina Bifida,	4
Hæmorrhage,	14	Suicide,	4
Hysteritis,	1	Schirrus,	1
Inflammation of the Lungs,	106	Sore-Throat,	17
Liver,	27	Syphilis,	6
Brain,	41	Scrofula,	22
Bowels,	39	Sudden,	39
Bladder,	3	Tumors,	9
Breast,	13	Teething,	4
Stomach,	15	Typanitis Abdominalis	1
Spleen,	1	Ulcers,	7
Kidneys,	2	Wounds,	3
Peritoneum,	3	Unknown,	107
Carried over,	2755	Total,	3374

By order of the Board of Health.

JOSEPH PRYOR, *Clerk.*

HEALTH OFFICE, January 1, 1821.

Of the above Deaths, there were:

Males of 20 years and upwards,	955	
Ditto under 20 years,	780	
		1735
Females of 20 years and upwards,	740	
Ditto under 20 years,	693	
		1433
Children principally under one year whose Sex is unknown,	206	
		3374

Agreeably to the returns received at the Health Office from 78 Practitioners of Midwifery, there have been born, in the City and Liberties, from the 1st of April to the 31st of December, 1820.

Male Children	1709
Female do.	1501
Making the total amount for the nine months	3210

[*Poul. D. Adv.*

Statement of Deaths in the City and County of New York, from the first of January, 1820, to the first of January, 1821, specifying the Sexes, Ages and Diseases of the deceased persons.

DEATHS IN EACH MONTH	MALES.	FEMALES.	TOTAL.	AGES.				
January	130	109	239	Under	1	Year		867
February	102	85	187	From	1	to	2	361
March	105	92	197		2	to	5	254
April	107	104	211		5	to	10	125
May	125	89	214		10	to	20	176
June	122	82	204		20	to	30	418
July	204	170	374		30	to	40	409
August	267	236	503		40	to	50	359
September	270	169	439		50	to	60	224
October	177	165	342		60	to	70	156
November	164	158	322		70	to	80	101
December	153	130	283		80	to	90	46
					90	to	100	17
TOTALS,	1926	1589	3515		100	to	110	2
				TOTAL,				3515

The above mentioned Deaths were caused by the following Diseases and Casualties, viz.

Abscess,	5	Amount brought forward,	1382
Aneurism,	2	Drowned,	42
Apoplexy,	54	Dysentery,	242
Asthma,	7	Dyspepsia,	4
Burned or Scalded,	17	Epilepsia,	6
Carbuncle,	1	Erysipelas,	1
Cancer,	18	Fever,	130
Casualties,	22	—— Bilious,	13
Catarrh,	5	—— Bilious remit.	25
Chicken Pox,	2	—— Hectic,	1
Child-Bed,	20	—— Inflammatory,	12
Cholera Morbus,	34	—— Intermittent,	1
Cholic,	7	—— Puerperal,	7
Compression of the Brain,	1	—— Remittent,	22
Consumption,	625	—— Scarlet,	5
Convulsions,	205	—— Typhus,	143
Contusion,	3	Flux, Infantile,	169
Cramp in the Stomach,	9	Fracture,	2
Diarrhœa,	46	Gout,	1
Drinking Cold Water,	10	Gravel,	4
Dropsy,	116	Hæmorrhage,	15
—— in the Chest,	26	Hœmoptytis,	3
—— in the Head,	147	Herpes,	1
Amount carried over,	1382	Amount carried over,	2231

Brought forward,	2231
Hives,	97
Hydrophobia,	1
Hysteria,	1
Infanticide,	14
Inflammation of the Bladder,	3
——— Bowels,	58
——— Brain,	22
——— Chest,	99
——— Liver,	22
——— Stomach,	6
Influenza,	3
Insanity,	6
Intemperance,	28
Jaundice,	19
Killed or Murdered,	3
Locked-Jaw,	6
Lumber Abscess,	2
Manslaughter,	1
Marasmus,	58
Measles,	74
Menorrhagia,	3
Mortification,	11
Nervous Disease,	3
Old Age,	100
Palsy,	41
Peripneumony,	28
Carried over,	2919

Brought forward,	2919
Pleurisy,	12
Pneumonia Typhodes,	8
Quinsy,	7
Rheumatism,	6
Rickets,	1
Rupture,	2
St. Anthony's Fire,	1
Schirrus of the Liver,	3
Scrofula, or King's Evil,	19
Sore Throat,	5
Spasms,	3
Spina Bifida'	1
Sprue,	25
Still-Born,	189
Sudden Death,	37
Suicide,	15
Syphilis,	10
Tabes Mesenterical,	113
Teething,	19
Tumora,	2
Vomiting Blood,	2
Ulcers,	11
Unknown,	65
Whooping Cough,	19
Worms,	20
Total,	3515

Of the above Deaths, there were:

Men,	947	
Boys,	979	
TOTAL MALES,		1926
Women,	784	
Girls,	805	
TOTAL FEMALES,		1589
Total,		3515

REMARKS.

The City Inspector respectfully reports to the Board, a statement of the Deaths in the City and County of New York for the year 1820, amounting to three thousand five hundred and fifteen, being three hundred and twenty nine over the preceding year.

For the first six months of the year, the city was very healthy, so much so, that the deaths, during that time, were fewer than in the same months of the former year. In July, however, diseases of a more serious character considerably increased, and continued through the succeeding months, during which period, the complaints of children that ended fatally, were above sixty more than in the corresponding months of 1819. [*Poul. D. Adv.*

In August, also, fevers became prevalent, particularly in Bancker-street and its neighbourhood, and confined their ravag s chiefly to the people of colour, as the following statement will show: Of two hundred and ninety-nine deaths of fevers throughout the city, during the last six months, one hundred and thirty-eight were of those people; although it is presumed they were not a twentieth part of the population of the city at large; and of this one hundred and thirty-eight so stated, one half were reported from Bancker-street and its vicinity.

It will doubtless be felt as a happy and providential cause of congratulation to our Fellow Citizens, that amongst the visitations of the past year, we had not to experience the alarming apprehensions of malignant disease; and that whilst other cities were unhappily afflicted with its scourge, Providence had kindly protected us from an evil of so much magnitude.

GEORGE CUMING, City Inspector.

City Inspector's Office, Jan. 8, 1821.

[*Poulson's American Daily Advertiser.*

Statement of Deaths in the City of Baltimore, from the first of January, 1820, to the first of January, 1821, specifying the Sexes, Ages and Diseases of the deceased persons.

DEATHS IN EACH MONTH.	MALES.	FEMALES.	TOTAL.
January	55	66	121
February	45	51	96
March	77	60	137
April	48	50	98
May	37	36	73
June	52	40	92
July	112	101	213
August	90	84	174
September	106	90	196
October	85	72	157
November	81	73	154
December	66	48	114
TOTALS,	854	771	1625

AGES.				
Under	1	Year		390
From	1	to	2	116
	2	to	5	48
	5	to	10	77
	10	to	20	113
	20	to	30	177
	30	to	40	210
	40	to	50	153
	50	to	60	107
	60	to	70	62
	70	to	80	35
	80	to	90	47
	90	to	100	9
	100	to	110	3
Still Born,				98
TOTAL,				1625

The above mentioned Deaths were caused by the following Diseases and Casualties, viz.

Asthma,	1	*Brought over,*	1097
Abscess,	2	Hœmorrhage,	2
—— of the Brain,	1	Hydrothorax,	2
—— of the Liver,	1	Hives,	1
Apoplexy,	18	Incarcerated Hernia,	1
Anasarca,	1	Jaundice,	4
Affection of the Stomach & Head,	1	Intemperance,	29
Burn,	6	Insanity,	9
Catarrh,	9	Inflammation of the Lungs,	3
Cancer,	7	—— Bowels,	5
Cramp Cholic,	2	—— Brain,	6
Casualty,	10	Indigestion,	1
Child-Bed,	20	Infantile unknown,	66
Cholera Morbus,	175	Liver Complaint,	11
Cholic,	10	Locked Jaw,	4
—— Cramp,	3	Mortification,	24
—— Bilous,	2	Marasmus,	6
Consumption,	328	Murdered,	4
Convulsions,	90	Old Age,	78
Croup,	73	Palsy,	17
Decay,	22	Pleurisy,	39
Dropsy,	43	—— Bilious,	3
—— in the Breast,	5	Quinsy,	3
—— in the Head,	8	Rheumatism,	2
Drowned,	20	Scrofula, or King's Evil,	4
Dysentery,	56	Scalded,	1
Diarrhœa,	2	Still Born,	98
Drinking Cold Water,	4	Sudden Death,	12
Epilepsy,	1	Sphacelus,	2
Fever, Bilious,	9	Suicide,	4
—— Intermittent,	5	Syphilis,	4
—— Remittent,	24	Thrush,	1
—— Nervous,	5	Teething,	20
—— Bilious Remittent,	45	Ulcers,	1
—— Scarlet,	4	Whooping Cough,	27
—— Typhus,	73	Worms,	32
Flux,	8	Unknown,	2
Gravel,	3		
Carried over,	1097	Total,	1625

Of the Deaths above enumerated, 488 were Coloured People.

By order of the Board of Health,

P. REIGART, *Secretary.*

HEALTH OFFICE, *Baltimore, Jan.* 5, 1821.

Statement of Deaths in the Town of Boston, from the thirty-first of December, 1820, to the first of January, 1821, specifying the Sexes Ages, and Diseases of the deceased persons.

DEATHS IN EACH MONTH	MALES	FEMALES	TOTAL	AGES.				
January,	52	40	92	Under	1	Year		246
February,	33	31	64	From	1	to	2	94
March,	47	50	97		2	to	5	62
April,	36	34	70		5	to	10	27
May,	30	41	71		10	to	20	57
June,	43	34	77		20	to	30	131
July,	50	28	78		30	to	40	99
August,	58	49	107		40	to	50	94
September,	59	67	126		50	to	60	69
October,	58	67	125		60	to	70	43
November,	47	52	99		70	to	80	40
December,	42	55	97		80	to	90	25
					90	to	100	4
Totals,	555	548	1103	Ages unknown,				112
				Total,				1103

The above mentioned Deaths were caused by the following Diseases and Casualties, viz.

Abscess,	1	*Brought over,*	496
Accident,	7	Drowned,	9
Apoplexy,	10	Dysentery,	14
Bilious Cholic,	1	Enteritis,	5
Burns,	1	Fever,	3
Calculus,	1	—— Bilious,	6
Cancer,	1	—— Nervous,	5
Cancerated Uterus,	1	—— Inflammatory,	3
Casualty,	5	—— Intermittent,	1
Cholera Infantum,	8	—— Puerperal,	8
—— Morbus,	6	—— Pneumonia,	26
Cramp,	3	—— Rheumatic,	3
Consumption,	220	—— Putrid,	1
Croup,	3	—— Scarlet,	9
Debility,	4	—— Spotted,	1
Diarrhœa,	3	—— Typhus,	43
Disease of the Heart,	7	Fits,	15
Diseases unknown,	187	Fracture,	1
Dyspepsia,	11	Gout,	4
Distorted Spine,	1	Hæmoptua,	1
Drinking Cold Water,	1	Hæmorrhage,	4
Dropsy,	14	Hanging,	4
Carried over,	496	*Carried over,*	663

Brought over,	663	*Brought over,*	921
Hernia,	2	Rickets,	1
Hepatitis,	6	Scalds,	2
Infantile Diseases,	132	Scrofula,	7
Inflammation of the Brain,	7	Syphilis,	4
Influenza,	2	Spasms,	1
Insanity,	2	Strangled,	1
Intemperance,	31	Strangulated Hernia,	1
Jaundice,	1	Still-Born,	89
Mortification	7	Suddenly,	9
Murdered,	2	Suicide,	6
Old Age,	39	Teething,	3
Paralysis,	16	Throat Distemper,	1
Pleurisy,	2	Whooping Cough,	24
Poison,	3	Worms,	3
Quinsy,	6		
Carried over,	921	Total,	1103

N B. There were no Deaths in the Hospital on Rainsford's Island, during the above period.—The number of Inhabitants in this town, by the last Census, were 43,893.

Published by order of the Board,

THOMAS JACKSON, *Sec'ry pro tem.*

[*Poul. Daily Adv.*

Statement of Deaths in the City of Charleston, from the first of January, 1820, to the first of January, 1821, specifying the Sexes, Ages, and Diseases of the deceased persons.

DEATHS IN EACH MONTH.	MALES.	FEMALES.	TOTAL.	AGES.				
January	38	20	58	Under	3	Years		251
February	22	23	45	From	3	to	10	52
March	26	18	44		10	to	20	49
April	31	23	54		20	to	30	99
May	27	28	55		30	to	40	129
June	40	38	78		40	to	50	80
July	55	37	92		50	to	60	75
August	62	40	102		60	to	70	38
September	54	39	93		70	to	80	28
October	48	36	84		80	to	90	18
November	47	23	70		90	to	100	5
December	29	23	52		100	to	110	1
					110	to	120	2
TOTALS,	479	348	827	TOTAL,				827

The above mentioned Deaths were caused by the following Diseases and Casualties, viz,

Abscess,	1	Brought over,	576
Accident,	20	Hooping Cough,	24
Angina Pectoris,	1	Inflammation of the Brain,	1
Apoplexy,	11	—— of the Lungs,	6
Asthma,	6	Insanity,	5
Cancer,	3	Influenza,	2
Catarrh,	12	Jaundice,	5
Child-Bed,	6	Intemperance,	10
Cholic,	6	Liver Complaint,	5
Consumption,	145	Locked Jaw,	21
Convulsions,	32	Measles,	6
Cramp,	1	Mortification,	3
Croup,	13	Old Age,	47
Debility,	55	Palsy,	11
Diarrhœa,	50	Peripneumony,	1
Dropsy,	59	Pleurisy,	6
Drowned,	7	Rheumatism,	5
Dysentery,	7	Rupture,	1
Dyspepsia,	1	Scrofula,	2
Executed for Piracy,	2	Scurvy,	1
Fever Bilious,	23	Sore Throat,	16
—— Catarrhal,	22	Sore Leg,	1
—— Country,	33	Spasm,	20
—— Hectic,	2	Stranguary,	1
—— Nervous,	18	Sudden Death,	7
—— Remittent,	1	Suicide,	2
—— Worm,	28	Teething,	38
—— Yellow,	11	Thrush,	1
Gout in the Stomach,	2	Wen,	1
Hæmorrhage,	2		
		Total,	827
Carried over,	576		

White Males,		232
White Females,		105
	Whites,	337
Black Males,		247
Black Females,		243
	Blacks,	490
TOTAL,		827

The Consumptions were generally among Strangers, who came here for the benefit of their health.

N. B. The few cases of Yellow Fever, were of persons unaccustomed to the Climate, and who had never been a summer in Charleston before.

By order of the Board,

JAMES A. MILLER, *Clerk.*

[*Poul. Dai. Adv.*

University of Pennsylvania.—At a public commencement held on the 6th of April, 1821, the following gentlemen received the degree of *Doctor of Medicine*, viz:

NAMES.	SUBJECT OF ESSAY.
NEW HAMPSHIRE.	
J. Underwood	Cutaneous Sympathy.
CONNECTICUT.	
George Marvin	Periodical Headach.
NEW YORK.	
Fran. S. Beattie	Tetanus.
Thomas C. Dunn	Tetanus.
NEW JERSEY.	
George Haines	Cataract.
Thomas Page	Dysentery.
T. J. Van Meter	Canker.
Okey H. Costill	Chlorosis.
Henry Holcome	Marasmus.
John Brick	Traumatic Hemorrhage.
PENNSYLVANIA.	
J. M. Staughton	Mania a potu.
Benj. R. Rees	Yellow Fever.
Thos. M'Euen	Injuries of the Head.
Edwin P. Atlee	Dysentery.
Jacob Hittell	Dropsy.
Joseph Griffith	Dysentery.
John Russell	Dysentery.
James R. Speer	Bilious Colic.
Ezekiel C. Cook	Cholera Infantum.
Samuel Freedley	Hepatitis.
Richard Wilson	Tic Douloureux
James H. Ewing	Amaurosis
MARYLAND.	
William Plater	Phlegmasia dolens.
Stephen White	Dysentery.
William L. Jones	Epilepsy.
William Gray	Phlegmasia dolens.
Christopher Stoddert	Dysentery.
James A. Shorb	Menstruation.
VIRGINIA.	
Rd. J M'Kim Holiday	Fungus of Antrum Maxillare.
Richard Short	Cholera Infantum.
John Hendree	Puerperal Fever.
Wm. M. Maxwell	Gastritis.
Charles C. Byrd	Secale Cornutum.
Charles Sturdivant	Amenorrhœa.
Robert E. Taylor	Cynanche Trachealis.
R. T. Colston	Menstruation.
Edward P. Scott	Menstruation.
Isaac Telfair	Hæmorrhoids.
Lang C. Rives	Oil of Turpentine as a remedy.
L. G. Coleman	Cynanche Trachealis.
J. O. Christian	Dysentery.
James Somerville	Experiments on Absorption.
Samuel C. Snyder	Cynanche Trachealis

H. W. Bramham	Dyspepsia.
Henry E. Shore	Dysentery.
Thomas Old	Dysentery.
Wyatt Christian	Peritonitis.
Geo. Claiborne	Bilious Disease of King William County, Va.
Richard W. Royster	Leucorhœa.
Theo. A. Carter	Atrophia Ablactatorum.
William Stith	Digestion.
Robert H. Cabell	Pleurisy.

NORTH CAROLINA.

J. C. Skinner	Hydrothorax.
L. H. Coleman	Typhus.
Isaac N. Jones	Typhus.
Wm. W. Stewart	Pneumonia Typhoides.
John S. Jackson	Schirro-Cancer of Uterus.
Isaac Pipkin	Phthisis Pulmonalis.

SOUTH CAROLINA.

Edward Cuthbert	Hysteritis.
Wm. S. Price	Dysentery.
Thomas Smith	Enlargement of Prostrate Gland.
Wm. F. Lee	Dyspepsia.

GEORGIA.

Richard Banks	Hydrocele.
Cullen Lockett	Hepatitis.

TENNESSEE.

Wm. W. Lea	On Fever.

MISSOURI.

Geo. P. Todson	Chorea Sancti Viti.

At the same time, the following gentlemen received the degree of *Master of Pharmacy*.

John Hart, No. 8, South Second street.
John White, No. 82, North Front street.
John Y. Bryant, No. 27, Market street.
Robert Milnor, No. 161, South Second street.
Anthony Ecky, No. 53, South Seventh street.
Thomas Cave, No. 45, Market street.
Charles Marshall, jr. No. 310, Market street.
Christopher Marshall, No. 19, North Fourth street.
Mordecai Y. Bryant, No 241, North Second street.
Mordecai L. Gordon, No. 58, North Second street.
James D. Rooney, S. W. corner of Green and Second streets.
Charles Treichel, No. 93, Walnut street.
George F. Garretson, corner of Race and Fourth streets.
David B. Ayers, No. 164, North Third street.
John Stitt, corner of Race and Sixth streets.
William Poole, No. 66, North Second street.

J. R. COXE, *Dean of the Faculty.*